DOCUMENT RESUME

ED 352 950 IR 015 895

TITLE	Telecommuting. Hearing on H.R. 5082, A Bill To Promote the Use of Telecommuting, before the Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce. House of Representatives, One Hundred Second Congress, Second Session.
INSTITUTION	Congress of the U.S., Washington, DC. House Committee on Energy and Commerce.
REPORT NO	ISBN-0-16-039423-6
PUB DATE	29 Jul 92
NOTE	99p.; Serial No. 102-149.
AVAILABLE FROM	U.S. Government Printing Office, Superintendent of Documents, Congressional Sales Office, Washington DC 20402.
PUB TYPE	Legal/Legislative/Regulatory Materials (090)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Facsimile Transmission; Federal Government; *Futures (of Society); Government Role; Hearings; *Information Technology; Interactive Video; *Long Range Planning; Microcomputers; Modems; Public Policy; Technological Advancement; *Telecommunications; Teleconferencing
IDENTIFIERS	Congress 102nd; Fiber Optics; *Telecommuting; Video Teleconferencing

ABSTRACT

This hearing on H.R. 5082, "The Telecommuting Act of 1992," focuses on how the developing telecommunications infrastructure can provide major benefits to the environment, employers, and the daily life of working people, who now have the ability to telecommute to their office from some alternative work site located nearer to their home. It is noted that telecommuting hopes to take advantage of technology such as personal computers, modems, fax machines, fiber optics, videoconferencing, and private and public networks, to create remote satellite or tele-work centers away from the traditional work place. H.R. 5082 introduces a legislative proposal to create an office of telecommuting within the National Telecommunications and Information Agency. Witnesses for this hearing include: (1) Steny H. Hoyer, U.S. Representative from Maryland; (2) Carlene Bawden, General Services Administration (GSA); (3) Maxine Sterling, Coordinator for Telecommuting, GSA; (4) Charles M. Oliver, Office of the Assistant Secretary for Communications and Information, National Telecommunications and Information Administration; (5) Charles E. Grantham, University of San Francisco; (6) John W. Dillon, Chesapeake and Potomac Telephone Company; (7) Marsha L. Fuller, Fuller Consulting Services; and (8) Edward Risse, Synergy Planning, Inc. Also included are materials submitted for the record: "Can Telecommunications Help Solve America's Transportation Problems?" (Arthur D. Little) and a statement by John S. Niles of Global Telematics. (ALF)

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TELECOMMUTING

HEARING

BEFORE THE

SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE

OF THE

COMMITTEE ON ENERGY AND COMMERCE HOUSE OF REPRESENTATIVES

ONE HUNDRED SECOND CONGRESS

SECOND SESSION

ON

H.R. 5082

A BILL TO PROMOTE THE USE OF TELECOMMUTING

JULY 29, 1992

Serial No. 102-149

Printed for the use of the Committee on Energy and Commerce

U.S. GOVERNMENT PRINTING OFFICE

59-898 WASHINGTON : 1992

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0-16-039423-6

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TELECOMMUTING

WEDNESDAY, JULY 29, 1992

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:10 a.m., in room 2322, Rayburn House Office Building, Hon. Edward J. Markey (chairman) presiding.

Mr. MARKEY. Good morning, today we hold a hearing on H.R. 5082, the bill introduced by our colleague, Mr. Tom McMillen, and we examine how our developing telecommunications infrastructure can provide major benefits to the environment, employers and the day-to-day life of working men and women. With the advancement of high-speed data transfers, fiber optics, compression technologies and other technologies, employees now have the ability to telecommute to their main office from some alternative work site closer to their home. Telecommuting is the use of electronic communications to replace or reduce the trip from home to the traditional workplace. With telecommuting and the establishment of tele-work centers in areas surrounding urban centers, we will be moving work to people instead of moving people to work.

It is an attractive alternative for employees who can work by way of computers by combining the use of information and communications technologies with the concept of the flexible workplace. The reality of nightmare commutes, steep real estate prices and tougher air quality laws have more employers, including the Federal Government, looking into alternative work sites, such as telework centers.

Beginning with the government's "Flexi-Place" program, both the government and the private sector have been finding many benefits from reducing the long commute many employees take to get to their jobs in urban areas. The benefits of telecommuting are many. Fewer cars are on the road, traffic congestion becomes lighter, less fossil fuel is consumed and the air becomes cleaner for those of us in the urban areas.

In addition, employers gain more productive employees and a larger applicant pool from which to draw qualified applicants. Another benefit is that this promotes rural economic development and at the same time jobs become more accessible to those with disabilities who, for one reason or another, cannot make the long commute into the city.

Finally, in this era when family values are trumpeted by every politician, here is an idea that would increase the quality of life for

those telecommuting by enabling workers to spend more time with their families and more productive time at work.

Telecommuting, however, is not a new idea. The President of Bell Labs once commented that currently, the technology is in place for everyone to work out of their home or a tele-work center and never have to set foot in the main office. Unfortunately, the current dynamics of society would never let this happen.

Consequently, we need to change the sociology of work as much as the technology of the workplace. This is why the McMillen bill, H.R. 5082 is a good start. It will permit government to demonstrate the viability of this concept and pave the way for private industry to embrace telecommuting.

Today's advanced telecommunications infrastructure makes telecommuting possible by providing technological capabilities from fax machines and computer modems to video conferencing. I look forward to the day when employees want cyberspace, not a parking space. Telecommuting is tangible evidence that telecommunications can truly improve—just a little telecommunications subcommittee humor, Mr. Hoyer. We have to amuse ourselves in our jurisdiction. Telecommuting is tangible evidence that telecommunications can truly improve people's lives, making telecommuting and tele-work centers a win/win situation for the environment, employers, and most importantly, the day-to-day lifestyle of the employee.

I commend the gentleman from Maryland, Mr. McMillen for promoting his legislation, bringing this issue before the subcommittee, and we will be working with him very closely in order to secure passage of the legislation.

The time of the Chair has expired. We now turn to recognize the gentleman from New Jersey, the ranking minority member on the subcommittee, Mr. Rinaldo.

Mr. RINALDO. Thank you very much, Mr. Chairman. I want to take this opportunity to commend you and certainly our colleague from Maryland, Mr. McMillen, for his leadership on this issue. Telecommuting holds the promise of offering an alternative to the traditional working lifestyle. Through the creation of remote work sites it may be possible for employees who work in crowded urban areas to avoid the long and tedious commutes to the office, and instead walk or even ride a bike to tele-work centers located 2 or 3 miles down the road.

Modern telecommunications make possible more productivity than ever before in the history of American business. Personal computers, modems, fax machines, fiber optics, video conferencing and private and public networks make possible a whole new generation of interactive and instantaneous information transfers. Telecommuting hopes to take advantage of such technology to create, in effect, what I would like to term the Office of the Future by establishing remote, satellite or tele-work centers which are capable of allowing employees to take care of business away from the traditional workplace.

Everyone is well aware of the difficulties associated with commuting. Telecommuting offers employees relief from the traffic congestion, long commutes, parking problems and stressful lifestyles. It also offers employers benefits and improved working morale, working conditions and productivity. Additionally, telecom-

muting offers the benefit of less crowded urban areas, reduction in air pollution, lower fuel consumption and through less traffic, even greater highway safety.

But the promises offered by telecommuting are not without any costs. Each tele-work center requires careful planning, organization, and location. Most importantly, the issue of funding for telework centers must be carefully considered. A clear business plan must be made as to the exact apportionment of costs between the Federal Government, State governments and private industry. It will serve the interest of no one to start a project which must be abandoned halfway through completion due to lack of careful planning and financing considerations.

And for this reason, the legislative proposal in the McMillen bill to create an office of telecommuting within the National Telecommunications and Information Agency is a good first step.

Telecommuting offers great possibilities. If the obstacles which could be encountered are overcome, and I feel confident that they can be, it presents a very realistic way to improve working lifestyles for individuals, productivity for business, and environmental concerns for industry.

Once again, Mr. Chairman, I commend you for holding this hearing. I look forward to the testimony of our distinguished first witness, Mr. Hoyer, and the other witnesses, and yield back the balance of my time.

Mr. MARKEY. The gentleman's time has expired. The Chair recognizes the gentleman from Maryland, Mr. McMillen.

Mr. MCMILLEN. Thank you, Mr. Chairman, for holding these hearings. I certainly appreciate Mr. Rinaldo's comments as well, and on this very, very important issue of telecommuting I am glad that my colleague from Maryland could be here, who has also been very, very involved in this issue and has shown great leadership in securing an appropriation for $5 million for up to six centers.

Both Steny and I, due to redistricting, have become more sensitive to the economic possibilities of rural America.

Mr. HOYER. They are limitless.

Mr. MCMILLEN. We certainly think that telecommuting can fit into that future.

I also would like to add a note on Congressman Hoyer's testimony because telecommuting makes good economic sense. The rent is cheaper, the labor is cheaper and there is great possibilities for devolving these kinds of centers across the United States, and certainly Washington, D.C. with so much Federal employment, is a perfect place to start.

I became very interested in this issue really about a year or so ago when I actually sat down and read the President's national energy strategy and in the President's national energy strategy they pointed out the need for telecommuting and their desire to get about $92 million directed towards telecommuting for the future, so I think we have seen great advances in a relatively short period of time in this area.

Mr. Chairman, I have a statement I would like to include in the record, but let me just summarize. Telecommuting has long been portrayed as the way of the future, which it is. What is becoming increasingly apparent however is that the future is here. Telecom-

muting is more than an interesting idea. It has become an inevitable necessity in certain areas of the country.

While a central focus has been to address the problems of urban congestion, it also holds great potential for the economic resurgence of rural America. Basically telecommuting relies upon two approaches, working out of the home, or the satellite offices. Both of these approaches rely on computer modems, fax machines, telephones and other technologies to tie the employee into the central place of work.

I think as we see advances in fiber optics, we will also have the ability to use two-way video as a way of enhancing these centers and making them more productive. A recent study by Arthur D. Little estimates that a reasonable level of telecommunications substitution in this country of 10 to 20 percent would lead to an annual savings of $23 billion, including productivity savings of $17.8 billion, an energy savings of $3.7 billion, pollution savings of $1.2 billion and infrastructure savings of $5 million.

Again, it makes good economic sense. Another study by a task force of government agencies in Virginia estimated that for 1988 levels, by removing 1 percent of the commuters from the roads the State would save $580 million in construction and maintenance cost. This did not include savings in fuel consumption, decline in air pollution or other intangible benefits.

I am glad to see, as I said before, the administration moving forward in its national energy strategy as I referenced earlier. The legislation that I produced earlier this year, H.R. 5082, was an effort to try to create an office of telecommuting in the National Telecommunication and Information Administration. It will provide for funding for five cell work centers in the greater Washington, D.C. area. I envisioned this office as sort of an information clearinghouse for telecommuting for the future as a central place where States and local government go to, and private firms, to learn what is happening in this area.

The telecommuting centers were designed to augment and replicate what GSA and OPM are currently developing in Hagerstown, Md., setting up these satellite centers so that Federal workers can work outside of the District of Columbia.

Let me just say, Mr. Chairman, that I am certainly a tremendous advocate of this. I think it does have great potential, as I said earlier, and I certainly want to again thank you for holding these hearings. I would also like to acknowledge John Dillon, who is here from C&P Telephone who lives on the Eastern Shore of Maryland, so he has an appreciation of the need to bring economic development to the shore. He also has the great advantage of telecommuting.

Again, thank you and thank Mr. Hoyer. Thank you very much.

Mr. MARKEY. The gentleman's time has expired. The gentleman from Alabama seeks recognition.

Mr. HARRIS. Thank you, Mr. Chairman. I don't have an official statement other than just to welcome our witnesses. We look forward to hearing from Steny Hoyer and this is an exciting concept and I look forward to hearing the witnesses testify about it. Anyone that has to drive in in the mornings realizes that certainly

we need to be looking for other options and alternatives to 2 and 3 hour commutes.

So I yield back the balance of my time.

Mr. MARKEY. No other members seeking recognition, we will now turn to our first witness, the Chairman of the Democratic Caucus, the gentleman from Maryland, longstanding articulate spokesman for rural America, you are here to testify on behalf of telecommuting, and we welcome you and whenever you feel comfortable, please proceed.

[The text of H.R. 5082 follows:]

I

102D CONGRESS
2D SESSION

H. R. 5082

To promote the use of telecommuting.

IN THE HOUSE OF REPRESENTATIVES

MAY 6, 1992

Mr. MCMILLEN of Maryland introduced the following bill; which was referred to the Committee on Energy and Commerce

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A BILL

To promote the use of telecommuting.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Telecommuting Act of 1992".

SEC. 2. OFFICE OF TELECOMMUTING.

(a) ESTABLISHMENT.—There is established in the National Telecommunications and Information Administration an Office of Telecommuting (hereinafter referred to as "the Office").

(b) FUNCTIONS OF THE OFFICE.—The functions of the Office shall include—

(1) acting as a clearinghouse for information on telecommuting activities and techniques;

(2) promoting the development of telecommuting technologies, techniques, and procedures;

(3) promoting the adoption by employers of the use of telecommuting; and

(4) such other functions as the Secretary of Commerce may assign.

SEC. 3. FEDERAL TELECOMMUTING SATELLITE CENTERS.

(a) AUTHORIZATION.—There are authorized to be appropriated $5,000,000 for fiscal year 1993 to permit the National Telecommunications and Information Administration in conjunction with other relevant Federal agencies, to make grants in accordance with this section to establish telecommuting centers.

(b) ELIGIBLE PROJECTS.—Funds provided by grant under this section shall be used to establish at least 5 satellite telecommuting offices for the use of employees of agencies located in the Washington, D.C., metropolitan and surrounding areas. Such satellite offices shall—

(1) not be within 20 miles of the District of Columbia, but no farther than 200 miles;

(2) involve the active participation, through contribution of equipment, of the agencies whose employees will use the satellite offices; and

(3) permit the lease of any excess capacity to private persons.

(c) SELECTION PREFERENCE.—In selecting proposals for funding under this section, the Director of the National Telecommunications and Information Administration shall give preference to—

(1) sites at which telecommuting satellite offices are already in development on the date of enactment of this Act; and

(2) sites located in underdeveloped, rural, or areas of high unemployment.

(d) MATCHING REQUIREMENTS.—The Administration shall establish matching requirements for State or local authorities or organizations, based upon ability to contribute. Such requirements shall permit in-kind contributions, such as job training or donation of facilities.

O

STATEMENT OF HON. STENY H. HOYER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. HOYER. As an aside, before I start, in my new district, though some of it likes to think of itself as rural, when you look at the highways every morning, it is also a suburban commuting community, a little further outside the Washington area that I now represent, but close enough to have thousands of people on the road. And I want to thank you, Chairman Markey and the ranking member, Mr. Rinaldo, and certainly my good friend and colleague from Maryland, Tom McMillen, who has been a leader on this issue and my good friend, Claude Harris for allowing me this opportunity to testify this morning.

As this subcommittee is very well aware and has articulated very well, the Treasury, Postal Service and the General Government Subcommittee on Appropriations has included funds for the General Services Administration to move forward on up to six Flexi-Place Work tele-commuting centers.

These are essentially demonstration centers to explore the feasibility of this concept. H.R. 5082 introduced by Tom McMillen, is an important and critical step in moving this idea a step further. This legislation would create, as Congressman McMillen has said, an office of telecommuting within the National Telecommunications and Information Administration. In addition, it would authorize $5 million for at least five telecommunicating centers in the area surrounding Washington, D.C.

Mr. Chairman, Mr. Rinaldo, this program allows us to do more than talk about family values. Each one of you has said something about that in your statements. It allows us to do something to actually help families. Every day thousands of vehicles in my district and in yours clog roadways around our regions. That means wasted time, increased air pollution and time away from the home.

And in this age of technology, much of this congestion is clearly unnecessary. Today workers who are in jobs that require significant amounts of computing and telephone work could just as well, and in fact in many respects better be served at the sites closer to their homes. Work schedules could be modified so that for a certain part of the week they could, if required, report to a downtown office for meetings or other work requirements. But with teleconferencing capabilities, even these meetings may be able to be held without actual on-site presence required.

This means that work sites would be closer to where employees actually live. These sites could be linked through telephones, computer lines and teleconferencing capabilities, which this subcommittee is in the process of developing and making sure that America focuses on it and that it be given a legislative framework within which technology can be developed and utilized to the best extent possible.

Very simply, if employees are spending less time on the road, they are spending more time with their families and the region will be enjoying cleaner air as well. One of the reasons that the Treasury Subcommittee appropriated funds for this program this year is that we fully expect that these centers will save the government money as well. As you know, acquiring space downtown,

either owned or leased, results in premium cost to the General Services Administration. If smaller centers could be located outside the immediate region, then GSA will presumably enjoy lower rates for space. Those savings are hoped to more than offset the cost of equipping and operating these centers.

I think we are playing a positive, but not necessarily a very costly role in the development of these centers. Today you will hear from many of the experts in this field. Ms. Marsha Fuller has been doing outstanding work in this area and has been hard at work at GSA and the Office of Personnel Management to establish a pilot program in western Maryland, as Congressman McMillen has suggested.

I look forward to reviewing their testimony and benefiting from their expertise. As a matter of fact, should I return, as I hope to, with the retirement of Ed Roybal, I will be chairing the Treasury Postal Committee which oversees GSA. We look forward to working very closely, Mr. Chairman, with you and the members of your committee on a further focus on this exciting development.

I would only have one suggestion that the subcommittee might want to consider. If the program is going to work, it needs to have continuity. H.R. 5082 creates an office in the Department of Commerce. Now, I haven't had the opportunity of discussing this with Congressman McMillen extensively. Current expertise, however, exists within OPM and GSA, and they are working on this right now, and funds will exist for a demonstration program in GSA that could provide important information for additional efforts, such as the five centers that are provided for in this bill.

I would respectfully suggest that you consider the possibility that it may make more sense to place this Agency within GSA rather than Commerce. I don't feel strongly about that but it is something that I think you might want to focus on as you consider and mark up this bill.

Finally, Mr. Chairman, let me again commend the hard work of Congressman McMillen. He has worked long and hard on this issue and continues to explore ways in which we could improve the quality of life for our Federal workers and their families, and although we are focused today on Federal workers, this obviously is a demonstration program that has ramifications throughout the work force, and therefore is not at all limited.

It just so happens the Federal workplace is a large workplace where experimentation and demonstration programs are very feasible, but obviously have application very broadly throughout our society. It is a task we must be about if we are to recruit and retain quality people to perform the many critical tasks of government and the private sector.

Again, I want to thank you for your time and attention, and I look forward to working with you, Mr. Chairman, Mr. McMillen, Mr. Rinaldo and others.

Mr. MARKEY. The gentleman's time has expired. The gentleman from New Jersey, do you have any questions?

Mr. RINALDO. No, I have no questions. I want to commend the gentleman for a very fine statement.

Mr. MARKEY. The gentleman from California.

Mr. MOORHEAD. Great statement.

Mr. HOYER. Thank you, sir.

Mr. MOORHEAD. We didn't realize you were going to be chairman of that subcommittee. So in reference to your point in your statement about expertise being in GSA and OPM, I think that is very true in terms of the development of these Federal centers.

One of the reasons why we wanted to make it a little bit larger clearinghouse and office in NTIA was the prospect of developing the private sector side of it. What I always envisioned was that when we set these up and get our phone companies and others putting fiber optics into a two-way video and all that, you have all the advantages of being in Washington without being there or anywhere else.

They may be used as magnets to create sort of appendages of private sector telecommuting centers next to really playing off the same fiber optic, if you will. So what you end up doing is kind of like the anchor in a shopping center, if you will.

So that is one of the reasons why there may be kind of a way to do both, if you will. The only question I really ask is that, in your legislation, which I think is a very, very important step forward, how do you envision this being done in parts of Maryland or in southern Maryland or wherever?

I mean, would you envision this be done in conjunction with community colleges or anything like that?

Mr. HOYER. Yes, I think it could be done in a number of ways. For instance, from my particular area of Maryland and of the Washington metropolitan area, Charles County Community College has been talking about doing something like this for some period of time.

I think, having talked to the local officials down there, they might be interested in, in effect, matching some funds that may be put up pursuant to this appropriation and pursuant to your legislation. So that they could have not only a Federal interface but, as the chairman indicated, a private sector interface as well working through the community college.

I perceive this as being sort of a partnership with the local governments who are very concerned about the commuting on their highways and they want to try to centralize the ability of the people who already live there to stay there. So from that perspective, I think in southern Maryland you are going to see a joint local/State cooperation with this Federal effort to develop this idea.

Mr. MCMILLEN. When you work on your legislation, I think what we have tried to do in our legislation is create that match, that partnership between the local government and State government and the Federal Government. So I think that is the way this thing could really get off the ground.

Thank you very much.

Mr. HOYER. Thank you.

Mr. MARKEY. The gentleman's time has expired. The gentleman from Alabama, Mr. Harris.

Mr. HARRIS. Steny, do you also see the possibility of maybe business incubators working in conjunction with the objectives that you have in your legislation? Are you familiar with——

Mr. HOYER. The concept——

Mr. HARRIS. I know they have some.

Mr. HOYER. I have some slight knowledge of incubators but——

Mr. HARRIS. It is where a small business started. It is—they are all in the same building and use common equipment and it just helps them get started and that is also something that may be——

Mr. HOYER. Claude, in respect to that question, my answer to Tom was, you have the business community, for instance, of Charles County is very interested in participating.

One of the things that they are doing is working very closely with the Chamber of Commerce and small businesses with respect to joint use, which is what you are talking about, of technology that no individual business, perhaps because of size, could afford but could jointly utilize in a telecommunicating center and a telecommuting center.

Charles County, for instance, right now has a concept of a building on site that they want to spend $5 to $7 million of which a portion would be the Federal, a portion might even be private sector contributions, and then the local match.

As a matter of fact. Charles County is now talking about $2.5 million as a share they are willing to participate in. But I think you are correct in the concept that this is government, private sector, small business utilization of technology that they couldn't afford individually. So I think the answer is yes.

Mr. HARRIS. Thank you, Mr. Chairman.

Mr. MARKEY. Thank you. Thank you very much.

Mr. HOYER. Mr. Chairman, thank you. You do good work.

Mr. MARKEY. You gave excellent testimony. Thanks, I appreciate it.

Our first panel, then, will consist of Mr. Charles M. Oliver, Senior Policy Advisor to the Assistant Secretary for Communications and Information from the Department of Commerce, and Dr. Carlene Bawden, who is the Associate Administrator for Administration from the General Services Administration.

If they would both please come up and sit behind their place cards. We welcome you both, and Dr. Bawden.

Ms. BAWDEN. Yes, Bawden.

Mr. MARKEY. Dr. Bawden, if we could begin with you and would ask each of you and all subsequent witnesses if you could keep your opening statements to 5 minutes, and that will then allow us to get into a question and answer period fairly quickly for each one of the panels.

We will begin with you, Doctor, and if you could move the microphone a little bit closer to you, whenever you feel comfortable, please begin.

STATEMENTS OF CARLENE BAWDEN, ASSOCIATE ADMINISTRATOR, GENERAL SERVICES ADMINISTRATION, ACCOMPANIED BY MAXINE STERLING, COORDINATOR FOR TELECOMMUTING; AND CHARLES M. OLIVER, SENIOR POLICY ADVISOR, OFFICE OF THE ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION, NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, DEPARTMENT OF COMMERCE

Ms. BAWDEN. Good morning, Mr. Chairman, and members of the subcommittee. The General Services Administration appreciates the opportunity to testify regarding telecommuting in the Federal workplace. I am Carlene Bawden, the Associate Administrator for Administration. I am accompanied this morning by Maxine Sterling, the GSA Coordinator for Telecommuting, and Donald Page, Branch Chief for the Office of Information Resources Management, and to my extreme right is Marty Barrack, who is the Information Resource Management Policy Analyst.

Unfortunately, Administrator Austin could not be with us today because of a prior commitment.

Let me say, Mr. Chairman, that based on discussions between the subcommittee staff and GSA staff, my presentation will focus on GSA's experiences with telecommuting, and as well as the 13 other Federal agencies who are participating.

Certainly, we commend you and members of the subcommittee for holding the hearings on implementing telecommuting work centers. GSA shares your concern and your interest in bringing about an effective program to help alleviate the problems associated with the modern commute. While such a program has potential benefits, in my testimony I will explain how telecommuting, and why GSA's participation in telecommunicating, does not need or require additional legislation.

The need for alternative or a flexible workplace arrangement has been precipitated by advances in telecommunications capabilities, by air pollution, by traffic problems, and social changes, including the need to address family issues. We at GSA and some 13 other agencies, have responded to these conditions by implementing, at the direction of the President's Council on Management Improvement what we call the Federal Flexible Workplace Project which encompasses a broad range of flexible working arrangements, generally referred to as telecommuting.

And Telecommuting has two different components. First, it is a work-at-home arrangement which we have considerable experience with. The second is interagency satellite work centers. The work-at-home program allows the Federal employee to stay at home, while the interagency satellite work centers would centralize employees from multiple agencies at a remote location away from their permanent duty stations and closer to their homes.

Federal workers most suitable for telecommuting are workers whose duties are similar to other workers in the service sector of our economy. This includes government, education, medicine, research and other industries characterized by service delivery rather than by production.

Workers in the service sector are considered "information or knowledge workers," those who collect, process or disseminate in-

formation or knowledge. In large part, through technological advances, information workers can perform the work virtually anywhere—in the home, at satellite offices or other remote locations.

In 1989, GSA, working under the auspices of the President's Council on Management Improvement, was tasked with implementing pilot telecommuting projects. A task force of Federal agencies, headed by GSA and the Office of Personnel Management, conducted a comprehensive study of flexible workplace programs in the private sector and State and local governments.

The group reviewed Federal laws and regulations that might inhibit the use of flexible workplace arrangements by Federal agencies. In January of 1990 the task force issued "Guidelines for Pilot Flexible Workplace Arrangements," and in March 1991, the Federal Personnel Manual Letter 368 was published to further assist agencies in their participation in the Federal workplace experience. Both GSA and OPM also developed recommendations to help Federal agencies participating in the pilot telecommuting program, to assist them in developing programs that ensure high productivity in these off site settings. So we have considerable leadership and participation by Federal agencies.

Participation in the program is voluntary. Within each Federal agency, managers decide if a position is suitable for telecommuting. A Federal employee is not required to participate in the telecommuting program. Telecommuting does not replace the traditional office setting—the permanent duty station remains the employee's primary office under the pilot program we have conducted. Participants are still required to spend some time working in the traditional office location.

Currently the work-at-home pilot project is under way. Over 800 Federal employees nationwide, representing more than a dozen agencies, are participating in the work-at-home pilot. The PCMI interagency task group that has been monitoring the project is currently completing its final evaluation report and recommendations. We expect the results to be available within the next 2 to 3 months

While the work-at-home program has been established, there is no federally directed pilot for interagency satellite work centers at this time. Local officials in Hagerstown, Md. and Winchester, Va. have proposed establishing an interagency satellite work center which would include Federal employees who currently commute 2 hours or more each day or each way on a daily basis between their homes and between—and Washington.

Both communities have organized a intergovernmental steering group that envisions establishing a cooperative venture comprised of Federal, State, and local government agencies. Under this program, managers from several levels of government could share resources and reduce the cost of administration for all participants. GSA and OPM have coordinated Federal support for this project, again under the auspices of PCMI, the President's Council on Management Improvement.

The interagency satellite work center is a promising new concept, we recognize—particularly when compared to existing home-based programs. It is hoped that administrative costs for interagency satellite work centers would be lower due to shared space, equip-

ment and services. This would be advantageous by attracting the interest of Federal managers who have previously shown limited support for the work-at-home arrangement because of the cost and productivity concerns. The interagency satellite centers appear more analogous to traditional offices thereby enhancing the perception that employees would be more productive. Again, we are dealing with perception here.

Interagency satellite work centers can only succeed with strong interagency support and I would underscore strong, interagency support. Participating agencies would have to share in the administrative cost.

We do not believe that there is a need for special legislation designed to set up satellite work centers. I emphasize that Federal agencies already have the necessary legal authority and guidelines to establish the centers along the lines that we are looking at. Although establishing interagency satellite centers as alternate work sites designed specifically for telecommuters is a new concept, the satellite center, as an extension of a headquarter or field office, is not a new concept.

When the flexible workplace project was initiated, interagency satellite work centers were envisioned as part of the overall pilot test and incorporated into the national guidelines. It follows that the establishment of interagency satellite work centers as alternate worksites can build on the experiences gained from the pilot initiative currently in progress. GSA's role in setting up interagency satellite work centers would be twofold. First, to provide office space, and second, to fulfill telecommunication and computer services requirements. GSA is prepared to act upon requests for space from authorizing agencies participating in telecommuting, and GSA can provide office space in the traditional way that we have always served our Federal clients by offering space in federally owned property or leasing in the commercial market.

Providing telecommunications and ADP services is another important way that GSA can support telecommuting. Telecommunications is an enabling technology that facilitates telecommuting programs, it is important to realize that some employees participating——

Mr. McMillen [presiding]. Your time has expired. Close up in a minute.

Ms. Bawden. Let me just make the point that employees participating in telecommuting do not always require sophisticated computers and telecommunications systems. Some employees only need pen, paper, and telephone.

Sorry for running over my time, Mr. Chairman. I will stop there.

[The prepared statement of Dr. Bawden follows:]

Statement of Dr. Carlene Bawden, Associate Administrator for Administration, General Services Administration

Good morning, Mr. Chairman and members of the subcommittee. The General Services Administration (GSA) appreciates this opportunity to testify regarding telecommuting in the Federal workplace. My name is Dr. Carlene Bawden. I am the Associate Administrator for Administration at the General Services Administration. I am accompanied today by Maxine Sterling, the GSA Coordinator for Telecommuting and Donald Page who is a Branch Chief for the Office of Information Resources Management Policy. Unfortunately, Administrator Richard Austin could not be

here today due to a prior commitment. Based on discussions between the subcommittee's staff and GSA's staff, my presentation will focus on GSA's experiences with telecommuting.

Mr. Chairman, I would like to commend you and other members of the subcommittee for holding this hearing on the implementation of telecommuting work centers. GSA shares your concern and interest in the implementation of an effective program to help alleviate problems associated with the modern commute. While such a program has potential benefits, special legislation to set up telecommuting programs is not needed. In my testimony, I will explain how telecommuting works and why GSA's participation in telecommuting does not require additional legislation.

The need for alternative or flexible workplace arrangements has been precipitated by advances in telecommunications capabilities, air pollution, traffic problems and social changes including the need to address family issues. GSA and other Federal agencies have responded to these conditions by implementing, at the direction of the President's Council on Management Improvement (PCMI), the Federal Flexible Workplace Project which encompasses a broad range of flexible working arrangements generally referred to as telecommuting. Telecommuting has two different components:

Work at home arrangements and interagency satellite work centers. The work at home program allows a Federal employee to work at home, while interagency satellite work centers would centralize employees from multiple agencies at a remote location away from their permanent duty stations and closer to their homes.

Federal workers most suitable for telecommuting are workers whose duties are similar to other workers in the service sector of our economy. The service sector includes government, education, medicine, research and other industries characterized by service delivery rather than production. Many workers in the service sector are considered "information or knowledge workers" who collect, process, or disseminate information or knowledge. Due in large part to technological advances, information workers can perform their work virtually anywhere—in the home, at satellite offices or other remote locations.

In 1989, GSA, under the auspices of the President's Council on Management Improvement (PCMI), was tasked with implementing pilot telecommuting projects. A task force of Federal agencies, headed by GSA and the Office of Personnel management (OPM), conducted a comprehensive study of flexible workplace programs in private organizations, and State and local governments. The group reviewed Federal laws and regulations that might inhibit the use of flexible workplace arrangements by Federal agencies. In January 1990, the task force issued "Guidelines for Pilot Flexible Workplace Arrangements", and in March 1991, Federal Personnel manual Letter 368 (FPM Letter 368) was published to further assist agencies in their participation in the Federal Flexible workplace Project. GSA and OPM also developed recommendations to help Federal agencies with the pilot telecommuting program and to assist them in developing programs that ensure high productivity in these offsite settings.

At this time, Mr. Chairman, I would like to briefly discuss how service workers in the Federal Government are participating in telecommuting programs and how these programs work. Participation in this program is on a voluntary basis. Within each Federal agency, managers decide if a position is suitable for telecommuting. However, managers cannot require a Federal employee to participate in a telecommuting program. Telecommuting does not replace the traditional office setting—the permanent duty station remains the employee's primary office. Participants are still required to spend some time working in the traditional office location.

Currently, the work at home pilot project is underway. Over 800 Federal employees nationwide, representing more than a dozen agencies, are participating in the work at home pilot project. The PCMI interagency task group that has been monitoring this project is currently completing its final evaluation report and recommendations. We expect the report to be issued by OPM within the next few months.

While the work at home program has been established, there is no federally directed pilot program for interagency satellite work centers at this time. Local officials in Hagerstown, Md. and Winchester, Virginia have proposed establishing an interagency satellite work center which would include Federal employees who currently commute 2 hours or more each way on a daily basis between their homes in Hagerstown or Winchester, and their offices in Washington, DC. Both communities have organized an intergovernmental steering group that envisions establishing a cooperative venture comprised of Federal, State and local government agencies. Under this program, managers from several levels of government could share re-

sources and reduce the cost of administration for all participants. GSA has coordinated Federal support on this project under the PCMI's auspices.

The interagency satellite work center is a promising new concept compared to existing home based programs. It is hoped that administrative costs for interagency satellite work centers would be lower due to shared space, equipment, and services. This would be especially advantageous by attracting the interest of Federal Managers who have previously shown limited support for work at home arrangements because of cost and productivity concerns. Furthermore, interagency satellite work centers are more analogous to the traditional office thereby, enhancing the perception that employees will be more productive. Interagency satellite work centers can only succeed with such strong interagency support. Furthermore, participating agencies must share in bearing administrative costs.

Nonetheless, we do not believe there is a need for special legislation designed to set up interagency satellite work centers. Federal agencies already have the necessary legal authority and guidelines to establish these centers. Although establishing interagency satellite work centers, as alternate worksites designed specifically for telecommuters is a new concept; the satellite center, as an extension of a headquarters or field office, is not a new concept. When the Flexible Workplace Project was initiated, interagency satellite work centers were envisioned as part of the overall pilot test and incorporated into the national guidelines. It follows that the establishment of interagency satellite work centers as alternate worksites can build on the experience gained from the pilot initiative currently in progress.

GSA's role in setting up interagency satellite work centers would be two-fold, to provide office space and to fulfill telecommunications and computer services requirements. GSA is prepared to act upon requests for space from authorizing agencies participating in telecommuting. However, we note that section 3(b)(3) does not provide guidance on how to implement "lease of excess space" which would not appear to be consistent with GSA policy concerning management and disposal of Federal excess real property. If this section refers to the leasing of excess space, it is not GSA's policy to acquire space in excess of the needs of Federal agencies. GSA can provide office space in the traditional ways that we have always served our Federal clients by offering space in federally owned property or leasing in the commercial market.

Providing telecommunications and ADP services is another important way that GSA can support telecommuting. Telecommunications is an enabling technology that facilitates telecommuting programs, but it is important to realize that some employees participating in telecommuting will not require sophisticated telecommunications equipment or services. GSA can equip those work at home or interagency satellite center workers that do require more elaborate telecommunications and computer services and equipment.

GSA's Information Resources Management Service (IRMS) is responsible for providing state-of-the-art telecommunications and computer equipment and services to the Federal community. Such equipment and services include digital central offices, digital systems, local area networks and integrated services digital networks, making remote data and voice communications possible. Services such as facsimile, teleconferencing, automatic call distribution, video conferencing, electronic and voice mail are available, allowing the remote exchange of all forms of information. This is done through GSA's Federal Telecommunications System 2000 (FTS 2000), and our local service telecommunications systems, which provide services in almost 300 cities nationwide. Telecommunications will not be a limiting factor on telecommuting as the services required to support this program are available across the country.

In summary, GSA shares the committee's interest in the concept of telecommuting and is committed to working on an interagency basis to establish interagency satellite work centers for interested Federal agencies. It is our view that the provisions in H.R. 5082 are not necessary for accomplishing successful telecommuting programs. GSA sees telecommuting as a human resources initiative that relies strongly on services provided by GSA. It is not a program that can advance telecommunications technologies. In fact, the technology currently available can address the needs of many telecommuting employees. GSA appreciates Congress' interest and support for telecommuting. However, H.R. 5082 is not necessary for accomplishing our shared objectives. Therefore, we oppose H.R. 5082.

Mr. Chairman, GSA looks forward to continuing to work with the subcommittee in exploring the development of these various flexible workplace programs at the lowest cost to the American taxpayer. I would be happy to answer any questions you or other members of the subcommittee may have.

Mr. McMILLEN. We are going to recess for 5 or 10 minutes. We have a vote. We will be right back and we will resume the hearing then.

[Brief recess.]

Mr. McMILLEN. We will reconvene the hearing and now move to Mr. Oliver, who is right there, Senior Policy Advisor at the Department of Commerce.

STATEMENT OF CHARLES M. OLIVER

Mr. OLIVER. Thank you for the opportunity to testify on the Telecommuting Act of 1992. Mr. Chairman, NTIA is a strong supporter of telecommuting but we believe that telecommuting should be available to all Americans, not just to government employees with access to special campuses. As we use the term telecommuting, it can include work from satellite offices, but it also includes the growing contingent of self-employed persons who produce products and services for distant organizations, governments and companies that increasingly rely on outsourcing for needs that formerly were met internally. According to one recent study, at least 35 million self-employed Americans are already working out of their homes.

Telecommuting also includes mobile workers with cellular phones and telecommunicating lap-top commuters. Telecommuting can provide many benefits for the telecommuters, the telecommuter's employer or customers, and for society at large. Today those benefits are accessible only to certain kinds of workers in specific situations, such as keypunch operators or claims processors for insurance companies who can use remote computer terminals to transfer text and data, but many jobs require face-to-face interactions or rapid transfer of high quality pictures, like MRI images for health care providers. Video phones and high definition fax machines could meet those needs but those kinds of technologies don't work well on our existing telecommunications network.

At NTIA we believe that the best way for telecommunications policy makers to support telecommuting is to facilitate the development of an advanced affordable telecommunications infrastructure that is accessible to all American homes and businesses.

The companies that operate that infrastructure should also be motivated to respond in a flexible way to customer needs expressed in the marketplace. NTIA has pursued that agenda in a variety of forums. We believe that the best way to achieve an advanced affordable infrastructure is to eliminate unnecessary regulation while promoting competition.

Private industry is much better equipped than government to assess and anticipate demand in the telecommunications marketplace from consumers and from businesses. In many cases, service providers that are eager to address those needs have been restricted from acting either by unnecessary government regulations or by barriers imposed by monopoly service providers. Government should remove restrictions on competitive entry, whether those restrictions have been imposed by government or by private monopolies.

In many cases, deregulation alone will suffice. Other situations may require carefully targeted intervention by government to

remove artificial barriers to entry. In both cases, the objective should be to liberate the private sector to do what it does best, respond to customer demand.

I turn now to H.R. 5082 proposed Telecommuting Act of 1992. Under the plan envisioned in this bill, agency employees would apparently log in at satellite work centers with telecommunications links to agency headquarters. This kind of application is possible but NTIA believes that telecommuting should be able to take place from workers' homes throughout America, not merely from designated work centers in the Washington D.C. Area.

The best way to reach that goal is to adopt policies that allow private service providers to build an advanced affordable telecommunications infrastructure that will be available everywhere. H.R. 5082 also proposes to create an office of telecommuting which would primarily serve two purposes, to act as a clearinghouse for information and to promote the development of telecommuting. NTIA is already addressing telecommuting in the context of telecommunications policy analyses, analyses that also address a broad range of other applications.

We find that approach to be more useful than discussing telecommuting or any other single application of telecommunications on a stand-alone basis. In sum, Mr. Chairman, NTIA believes that H.R. 5082 and this hearing have helped highlight the benefits of telecommuting, but for all of the reasons that I have discussed today and in my written testimony, the administration opposes H.R. 5082.

Ultimately the optimal means for government to promote the many beneficial effects of telecommuting will be to permit the development of a ubiquitous, advanced and affordably priced telecommunications infrastructure.

Thank you.

[The prepared statement of Mr. Oliver follows:]

STATEMENT OF CHARLES OLIVER

Thank you for the opportunity to testify on the Telecommuting Act of 1992. Before addressing the specific provisions of H.R. 5082, I would like to begin by defining telecommuting as we use the term at the National Telecommunications and Information Administration (NTIA), then address some of the general costs and benefits of telecommuting. I will also discuss some of the principal Administration policies that affect telecommuting.

Some people define the term "telecommuter" very narrowly to include only people working in their homes for employers located elsewhere.[1/] NTIA uses the term to include any use of telecommunications that reduces the need to travel to work. It can include work from satellite offices. It can include mobile workers with cellular phones and telecommunicating laptop computers. Telecommuting can also include the growing contingent of self-employed persons who produce products and services for distant organizations, governments and companies that increasingly rely on outsourcing for needs that were formerly met internally. According to one recent study, at least 35 million self-employed Americans work out of their homes.[2/]

Telecommuting can provide many benefits for the telecommuter, the telecommuter's employer or customers, and for society at large. For the telecommuter, its most obvious advantage is saving time. A recent Arthur D. Little (ADL) study found that, if only one of ten urban workers in America chose telecommuting on an average business day, those workers would save nearly a billion hours every year.[3/] ADL ascribes a value of $17 billion to those hours and identifies billions of dollars worth of other benefits as well. Telecommuters can also save money in transportation and health insurance costs, in the cost of meals, and in the cost of wardrobes. Many telecommuters will avoid injury and even death, by reducing the amount of time they spend in rush hour traffic.

The telecommuter's employer also stands to benefit. For certain kinds of work, many companies have found that home-based workers or workers in small towns are more productive than workers who must make stressful long commutes from distant suburbs to big city central business districts.[4/] Telecommuting can also save money for the employer by reducing the need for expensive downtown office space. To the extent that telecommuting enables workers to live in more congenial environments, it helps employers recruit and retain valued employees. NTIA routinely uses telecommunications to keep in touch with its two branch locations, where

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1/ Based on the results of one study, this definition would have included 3.6 million employees with full-time, commutable jobs working at home at least one day per week in 1990. Strazewski, *Sidestepping Rush-Hour Crush; Phones, Faxes, PCs Let Workers Operate at Home,* CRAIN'S CHICAGO BUSINESS, Oct. 8, 1990, at T1.

2/ *Id.*

3/ Ashok B. Boghani et al., CAN TELECOMMUNICATIONS HELP SOLVE AMERICA'S TRANSPORTATION PROBLEMS? (Arthur D. Little, Inc., February 1991) (ADL Study) at 41.

4/ United Health Care, for example, reports that the 300 people who process claims for it in small towns in northern Minnesota are 25 percent more productive than its workers in suburban Minneapolis. *See also* U.S. Department of Commerce, National Telecommunications and Information Administration, THE NTIA INFRASTRUCTURE REPORT: TELECOMMUNICATIONS IN THE AGE OF INFORMATION (1991) at 77-79.

fully half of our staff work. One is within commuting distance of Washington, D.C., near the Chesapeake Bay; the other is in Boulder, Colorado, at the base of a mountain range.

The benefits are not confined to telecommuters and their employers. Society at large benefits as well. For every hour the telecommuter saves by staying off the roads at rush hour, others save an approximately equal amount of time from reduced congestion.[5/] Telecommuting is one of the most efficient means known for reducing air pollution, and it can help reduce this country's dependency on foreign sources of fuel. Indeed, the Administration has made telecommuting part of its national energy strategy. To the extent that telecommuting makes jobs more accessible to economically depressed regions, it can help reduce the social tensions of poverty and unemployment.

The practicality of telecommuting is heavily dependent on the kind of telecommunications infrastructure that is locally available. Clerical work and routine conversations can be accommodated over existing networks, provided that adequate switching capabilities are provided. But even so fundamental a service as switching does not meet every employer's needs. Blue Cross/Blue Shield planned to locate a 150-person claims processing office in Willows, California, but couldn't because the local telephone company's switch was not able to handle high speed data communication from desktop computers. For Blue Cross and many other employers, remote work sites are practicable only if linked with efficient communications.

Certain kinds of workers can derive substantial benefits from mobile telephony. One trucking company, for example, has found that cellular telephones produced average productivity gains of $27 per day for its sales employees.[6/] The telecommunicating laptop computer will soon provide the equivalent of a mobile office in a briefcase, complete with access to unlimited file space and online libraries. We could soon begin to see an entire subculture of nomadic professional workers, in touch with home and office through increasingly sophisticated information technologies.

For some kinds of work-place interactions, there can be no substitute for face-to-face conversations. Videophones could provide a medium for many such interactions, but the existing telephone network is not able to support ubiquitous, high-quality videophone service at an affordable price.

What these examples illustrate is that the best way for telecommunications policy makers to support telecommuting is to facilitate the development of an advanced, affordable telecommunications infrastructure that is accessible to all American homes and businesses and is capable of meeting customer needs expressed in the marketplace. NTIA has pursued that agenda in a variety of forums. Last October, the Department of Commerce released a comprehensive NTIA report on the state of the nation's telecommunications infrastructure and included in it recommendations for changes in regulatory policy, some of which will require

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5/ ADL Study at 41.

6/ Comments of McCaw Cellular Communications, Inc., in NTIA Infrastructure Inquiry, at 18-19, *citing* Consolidated Freightways, Inc.-Cellular Telephone Trial Study, November 16, 1987.

legislation. The Department also released an NTIA report and recommendations on management of the radio spectrum.[7] Now we are endeavoring to apply those insights to specific regulatory and legislative proceedings.

In general, we believe that the most effective means of achieving an advanced, affordable infrastructure is to eliminate unnecessary regulation while promoting competition. Private industry is much better equipped than government to assess and anticipate demand in the telecommunications marketplace from consumers and from business. In many cases, service providers that are eager to address those needs have been restricted from acting, either by unnecessary government regulations or by barriers imposed by monopoly service providers.

Government should remove all restrictions on competitive entry, whether those restrictions have been imposed by government or by private monopolies. In many cases deregulation alone will suffice; other situations may require carefully targeted intervention by government to remove artificial barriers to entry. In both cases the object should be to liberate the private sector to do what it does best: respond to customer demand. For those portions of the telecommunications infrastructure that are not yet fully competitive, we support pro-competitive safeguards that emulate the incentives of the marketplace to the extent that is feasible. Once these reforms are adopted, telecommuting -- and other activities that depend on an advanced, affordable infrastructure -- can develop naturally, as demand develops and as service providers in the private sector anticipate and prepare for that demand.

Pro-competitive policies have already been successfully applied to long distance communication, where the inflation-adjusted price of interstate long distance service has declined by more than 40 percent since 1983;[8] to information services, whose revenues are growing by approximately 20 percent per year;[9] and to customer premises equipment, where there has been an explosion in the variety of options available to consumers in the 16 years since that market was fully opened to competitive entry. NTIA believes that it is time to apply the same kinds of prudent, pro-competitive policies to the last bastions of monopoly in the telecommunications arena, including the local exchange.

Competition has done more than reduce prices in the telecommunications industry; it has driven efficient investments in new technologies. In the competitive long distance arena, for example, many carriers now have virtually all-digital networks, linked in most cases through fiber optic circuits and advanced signalling systems. Once fiber is deployed, its carrying capacity can easily be expanded by upgrading electronic equipment at either end of the fiber. Long distance carriers are exploiting this potential by supporting new services like videoconferencing, which often substitutes directly for travel. In the spring of 1991, the largest interexchange carrier reported that its videoconferencing revenues had grown by 50 to 60 percent for the previous two

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7/ U.S. Department of Commerce, National Telecommunications and Information Administration, U.S. SPECTRUM MANAGEMENT POLICY: AGENDA FOR THE FUTURE (1991).

8/ Federal Communications Commission, Common Carrier Bureau, Industry Analysis Division.

9/ U.S. Commerce Department, International Trade Administration, U.S. INDUSTRIAL OUTLOOK 1992 at 26-1.

years. Videoconferencing and other broadband services can also be made available in local exchanges, where they would facilitate telecommuting. Competition will help make those services available sooner -- at affordable prices.

In the NTIA Infrastructure Report, and in subsequent filings with the FCC and letters and testimony to Congress, NTIA has advocated three principal policies for promoting competition in local telephone exchanges: allow cable television companies to provide telephone services; provide sufficient spectrum for radio-based alternatives to local wireline service; and require expanded interconnection among all local service providers to facilitate market entry by efficient competitors. Those are the principal means by which we would encourage more competition in the local exchange. But exposing local telephone companies to more competition is not by itself a total solution. Local exchange telephone companies will always play a key role and can perform it better if unnecessary and inefficient restrictions are eliminated. We recommend the following specific measures: allow all telephone companies to provide cable TV service in their local service areas, subject to effective safeguards to prevent potential anticompetitive conduct; rationalize depreciation regulations to allow replacement of obsolete equipment; and replace cost-plus price regulation, which encourages waste and inefficiency, with price caps regulation. All local carriers, including the established incumbents, must have sufficient pricing flexibility to respond fairly and effectively to competition. To the extent that government continues to require cross-subsidies between local exchange services, government should require that all local carriers bear a fair and proportionate share of the burden, as is the case with interstate carriers today. Those are some of the major policy issues within NTIA's purview that affect the nationwide environment for telecommuting.

I turn now to H.R. 5082, the proposed Telecommuting Act of 1992. As presently drafted, H.R. 5082 contains two proposals. It would authorize $5 million to be appropriated to permit NTIA to make grants to establish telecommuting centers for employees of agencies located in the Washington, D.C., area, and it would establish an Office of Telecommuting at NTIA.

NTIA's expertise in telecommunications policy, research, and spectrum management does not qualify it to select sites for the satellite offices contemplated in H.R. 5082. We are qualified to comment upon the proposal only insofar as it is premised upon certain assumptions about the telecommunications system. The language of H.R. 5082 implicitly assumes that advanced telecommunications capabilities can be made available at designated satellite work centers, where agency employees would apparently "park and log in" to agency headquarters. This kind of application is possible, but NTIA believes that telecommuting should be able to take place from U.S. workers' homes, not merely from designated work centers. Advanced telecommunications services can be made available throughout the Washington metro area and the nation as a whole. We believe that the best way to reach that goal is to adopt policies that allow private service providers to build an advanced, affordable telecommunications infrastructure that will be available everywhere.

H.R. 5082 also proposes to create an Office of Telecommuting which would primarily serve two purposes, to act as a clearinghouse for information and to promote the development of telecommuting. NTIA is already addressing telecommuting in the context of telecommunications policy analyses that also address a broad range of other applications. We find that approach to be more useful than discussing telecommuting, or any other single

application of telecommunications, on a stand-alone basis. Nobody will build an advanced telecommunications infrastructure solely to support telecommuting. They will build it to support telecommuting and many other applications.

Insofar as the clearinghouse function would imply distribution of studies produced by others, that function should be left to other agencies that are already geared up to perform that kind of service. For example, NTIA uses the Commerce Department's National Technical Information Service (NTIS) to distribute our own studies to the public. Members of the public can call NTIS, give them a MasterCard number, and receive NTIA's Infrastructure Report the next day by express courier.

The bill would also direct NTIA to promote the development of telecommuting technologies, techniques and procedures, and promote the adoption by employers of the use of telecommuting. We believe that such specific guidance is unnecessary. NTIA's Institute for Telecommunications Sciences already conducts extensive research on broadband communications and other technologies that will provide expanded opportunities for telecommuting in the years ahead. We have determined that a key pacing factor in the deployment of those technologies is the adoption of standards that all manufacturers and service providers can follow. The Institute also performs radio propagation studies that support expansion of mobile telephony and mobile data communication services. This work facilitates both telecommuting and all of the other applications that will require an advanced telecommunications infrastructure.

Concerning the language in the legislation that would direct NTIA to promote the adoption by employers of telecommuting, we believe that the best way for NTIA to promote efficiency-enhancing activities like telecommuting is to perform basic research and pursue an enlightened policy agenda that will encourage the development of an advanced, affordable telecommunications infrastructure.

In sum, NTIA believes that, while H.R. 5082 and this hearing have helped highlight the benefits of telecommuting, for all of the reasons that I have discussed the Administration opposes H.R. 5082. Ultimately, the optimal means for government to promote the many beneficial effects of telecommuting will be to permit the development of a ubiquitous, advanced, and affordably priced telecommunications infrastructure.

Mr. McMillen. Thank you very much for your testimony, Mr. Oliver, Dr. Bawden. In hearing your testimony on this, I can't help but think that once again the United States is lagging behind the rest of the world in being aggressive in the pursuit of technology and the pursuit of industrial strategies related to technology. It seems that this administration's predilection is that laissez faire will do nicely driving America towards the 21st Century when all of it indicates just the contrary.

Dr. Grantham in his testimony in the next panel points out that the United States lags behind Europe and Japan in the adoption of alternative work styles, including telecommunications. It seems that because of the vacuum in this administration's policies, we have to resort to the States to develop these policies. Washington State is moving forward with public, private tele-centers. California, Hawaii, and as I cited, the common market in Europe, in September of 1993 is going to have a specific meeting to try to come up with a planning action—for establishing of these forums.

Now, what I have heard from the—both NTIA and GSA, what I hear from GSA is we don't do this, we don't need this because we are doing it all right in the government. The approach of our legislation was not just focused on government employees. It was to be used as a demonstration product for Federal employees, but to expand it so that NTIA could be the central clearinghouse for information for public and private information with regards to telecenter.

Now, where do you expect business to come and get this information from the administration? If I am a businessman and I want to set up a telecommuting center, where do I get this information in the administration, Mr. Oliver?

Mr. Oliver. There are two places they could get it. One, NTIA today is already addressing telecommuting in the context of broader policy analyses. For example, in our NTIA infrastructure study we had a whole section on telecommuting. The reason why we felt it more useful to discuss telecommuting in the context of other applications is that people will not build an advanced telecommunications infrastructure solely for telecommuting. They will build it to support telecommuting, health care, education, and other applications. Second——

Mr. McMillen. That improving in the experience of California and Washington State and places like that?

Mr. Oliver. If the question relates to whether or not a deregulatory policy will promote an improved telecommunications infrastructure, I could answer in the following way. Through—for the last 25 years, through both Democratic and Republican administrations, the broad trend in telecommunications policy has been to progressively deregulate segments of the telecommunications industry. The results have been spectacularly successful in long distance communication, customer premises equipment and information services.

We are now ready for the next step, which is to begin introducing competition into the local service arena, just as competition has driven the deployment of all fiber networks in the long distance arena, we believe that the same kinds of policies can work in local telecommunications as well, not just by encouraging the telephone

companies to build up their infrastructure, but by allowing other companies, such as cable TV firms to participate as well.

Mr. McMillen. So what you are saying is that if the technologies develop, telecommuting is going to be following just right behind it, if the product and capacity is there, telecommuting will be a national offshoot of that; is that your point?

Mr. Oliver. We believe that an advanced telecommunications infrastructure is a necessary, though admittedly, not sufficient preconditioned to a broad adoption of telecommuting.

Mr. McMillen. My comment on that would be that the question of deregulation is certainly one issue, but promoting telecommuting is an entirely different one and I guess what—you know, what my point on this is that many people will testify that there is sufficient infrastructure to move forward with telecommuting.

Mr. Dillon of C&P in his testimony today, the technological facilities expertise to make tele-work centers work today is a reality today in Bell Atlantic. Why aren't they being developed? What is your administration's position in aggressively promoting telecommuting when all the evidence indicates that it would be a plus in this economy, environmentally and every other way?

You argue, well, once we continue to deregulate, it will happen on its own, but Mr. Dillon and others contradict that. They say that the infrastructure is there already to have these in place. Why is it not happening?

Mr. Oliver. We believe that the infrastructure is not fully adequate to have a broad use of telecommuting. Yes, there are many types of jobs that can.

Mr. McMillen. You know better than the phone company?

Mr. Oliver. The phone company itself has demonstrated to us that there are severe limitations in their existing computer base network. It would be rather as if we wanted to promote the automobile without taking steps to make sure that roads are built to support them. We would like to see the roads built.

Mr. McMillen. Again, this is the chicken and the egg. My problem about the administration is that we continue to hear pro-education, pro-environment. You yourself said, I am pro-telecommuting but what I hear in terms of your active promotion of telecommuting, establishing a simple office so that, you know, a one-stop shopping, I can call and get the information of State and local government and business, and you oppose that basic concept of trying to establish a modicum of promotion for telecommuting.

Mr. Oliver. This administration and the administration that preceded it has pursued policies that resulted in spectacular improvements in long distance communications. We would like to extend those successes into the local arena so that people can do more than just send low quality fax messages or computer data over the system.

We would like the system to be able to support two-way video phone conversations, high quality fax messages, and high definition x-ray images.

Mr. McMillen. Dr. Bawden, the administration's own national energy strategy calls for $92 million. I am proposing to begin the process by giving $5 million. My question to you is, would new

funding help facilitate your efforts or do you have all the money you need?

Ms. BAWDEN. Let me say for the initiative that we are focusing on, GSA does not have any experience. Some similar initiatives, such as satellite work centers, but not satellite work centers for telecommuters at a remote location. Therefore, it is kind of difficult to talk about whether or not $5 million is appropriate to put that in any context.

Offhand, I would say that that is a considerable amount, just from the buzzes that I have heard. We have to keep in mind that these involve multiple agencies and the agencies would be self-supporting and self-sustaining in this initiative, and therefore, although we don't have a lot of experience, we do expect agencies to provide for the cost of this satellite center.

Mr. MCMILLEN. I guess it comes down, again, conceptually our legislation was intended to create an office of telecommuting, set up these demonstration projects, and use them also as magnets for setting up private facilities around them, but also use the office for developing telecommuting across this country.

What we don't want to see happening is just the absence of leadership, aggressive leadership with the Federal Government and the States providing all the direction. I mean, by comparison there are three or four States that are light-years ahead of this administration and the common market in Japan is light-years ahead of this administration. This is not a new story. This is not a new story.

So when we offer legislation that says let's be aggressive about this at a relatively small amount of money, typically the administration comes in here and says that is not needed. It will happen on its own, but all evidence indicates that that is not the case.

Ms. BAWDEN. I would just like to comment that GSA something that I think we have to focus upon, is primarily in the business of building buildings and providing for leases and managing those leases and outfitting offices and providing Federal supplies.

The mission of GSA as a services administration is considerably different when we are talking about a nationally implemented human resources initiative. Our view is that this is somewhat inconsistent with the mission of GSA. We are involved through the PCMI, in terms of being the co-director of the Flexi-Place, but we believe that it would probably be best served by involvement from the Office of Personnel Management, because it is a personnel management issue.

Mr. MCMILLEN. What you are saying is that you would be in favor of the legislation if it was administered by—the demonstration centers in the Federal Government were administered by GSA and OPM.

Ms. BAWDEN. Two separate issues. The legislation—I am saying, as my testimony pointed out, that we already have the mechanism and the legal authority and the means in place to implement, notwithstanding the need for maybe developing more administrative guidelines for telecommuting centers, but we already have the mechanism.

We therefore don't need additional legislation on top of what we already have. So that is——

Mr. MCMILLEN. But you need the money?

Ms. STERLING. In terms of that, basically agencies come to GSA in the establishment of a building. We are not the lead; and it may be a question of appropriateness in terms of GSA being the lead Agency for telecommuting.

Mr. MCMILLEN. Do any of you commute to work everyday in the Washington area?

Ms. BAWDEN. Yes.

Mr. MCMILLEN. Do you enjoy the commute?

Ms. STERLING. No.

Mr. MCMILLEN. You ought to try a commute from Annapolis or the Eastern Shore sometime from Washington, see how my constituents enjoy that commute. I certainly hope that we can continue to be aggressive in the pursuit of that.

Just one last question, Mr. Oliver. You mentioned that infrastructure development is necessary, but not a sufficient condition. What else is needed, might you say, to promote telecommuting?

Mr. OLIVER. A couple of days ago I was talking to vice president of EDA, the company that Ross Perot founded and he said that they had found that information processing at companies typically involved only about 10 percent of the cost is in the hardware. As these new technologies are deployed, people will have to learn how to use them.

People are going to have to get used to the capabilities of the video phone. They are going to have to learn to reach out to all the information resources that will be available to them, both locally and around the world through it. Basically what we are talking about is really a very different kind of society overall, a society where people can live where they want to live, in places like the Eastern Shore where NTIA has a satellite office, or in places like Colorado where NTIA has another satellite office.

Those people in a sense telecommute through our existing narrow band phone system. They have learned how to work around the limitations of that system. We would like them to be able to learn how to exploit the full potential of a truly advanced infrastructure.

Mr. MCMILLEN. If you look on page 3 of my bill, that is exactly what we do, the administration shall establish matching requirements for State and local governments, organizations based on ability to contribute. Such requirements shall permit in-kind contributions, such as job training. That is exactly what is needed.

You need to go out to the local governments and use the community colleges and provide job training for these people to use this technology. That is exactly what the bill does. Thank you.

Mr. OLIVER. But if the technology isn't there, being trained how to use it won't do much good, will it?

Mr. MCMILLEN. We want to put the technology in place with the cooperation of your good office.

Mr. OLIVER. So do we. We just don't want it to go solely to a lead campus for Federal employees. We want it to be available for everyone.

Mr. MCMILLEN. So does our legislation. Our own legislation creates five telecommunications centers but it creates an office to develop this across the country. I mean, this is not just limited to the Federal Government, but the Federal Government ought to be able

to be the magnet, as when we built the roads, interstate highway system in this country, it built a pathway.

We have done this before. This is not a novel concept for our country to pursue.

Mr. OLIVER. We are in full agreement with your objectives and we commend your intent, but we believe that an infrastructure for the whole country can be available much sooner than most people realize and we would like to keep the public's eye on the ball moving in that direction.

Mr. MCMILLEN. I appreciate all of your testimony. We look forward to working with you on this and obviously we have a difference, I guess, in philosophy, but that is what I guess elections are about in November, so we thank you very much.

Our next panel includes four panelists, Dr. Charles Grantham, Associate Professor, University of San Francisco. Mr. John Dillon, Vice President, C&P Telephone Company, Ms. Marsha Fuller, President of Fuller Consulting Services and Mr. Edward Risse, President of Synergy Planning, Inc.

We will begin with Dr. Grantham. Again, your statement will be included in the record. Please, if you will, limit your testimony to 5 minutes

STATEMENTS OF CHARLES E. GRANTHAM, ASSOCIATE PROFESSOR, COLLEGE OF PROFESSIONAL STUDIES, UNIVERSITY OF SAN FRANCISCO; JOHN W. DILLON, VICE PRESIDENT, CHESAPEAKE AND POTOMAC TELEPHONE COMPANY OF MARYLAND; MARSHA L. FULLER, PRESIDENT, FULLER CONSULTING SERVICES; AND EDWARD M. RISSE, CO-PRINCIPAL, SYNERGY PLANNING, INC.

Mr. GRANTHAM. Thank you, Mr. Chairman, I am going to try to do even better than that in the interest of leaving some more time for questions. I am a sociologist by training and am really interested in this phenomena in terms of the effect it has on the family and community development. And as my testimony that is in the record indicates, we have discovered a number of things about this in looking at how telecommuting and tele-work centers have developed in California.

And given the previous comments, I would like to focus on one thing at this point. The technological base to accomplish this is largely in place in the United States. The current barrier is primarily sociological in nature and therefore could be positively impacted by the establishment of the office that you are talking about.

This office could serve also as the avenue to open access to more governmental services through tele-work centers, something we are trying to do in California today.

What we have found basically is that tele-work centers require one good business plan to accompany these ventures from a commercial standpoint and not just subsidized from government. Market the business benefit to employers is critical and is often neglected, but we do feel it can be done.

The design of tele-work centers to maximize individual worker productivity and comfort only perpetuates the negative social as-

pects that we sometimes find, and we suggest that they be designed to promote teamwork and connecting employees back to the central office.

The findings that cover a number of studies over the past 2 years are as follows: One, we find that telecommuting increases productivity of white-collar workers on average of 16 percent, which drops right to the bottom line for the business. The negative effects of isolation can be overcome with proper training of managers and the telecommuters.

The initial resistance to the use of tele-work options comes, in our opinion, from a lack of adequate management skills, knowledge and training, as was mentioned before, and selection of people who participate in this and designing the work practices that they use. But we also know that all of that can be overcome through proper training and education. What seems to be lacking right now is the central focus at a point where people can go in the private sector to find out how to do this.

Tele-work centers also need to be developed as a part of a community business strategy, and one of the other witnesses will talk about that in some detail. That is when they are successful. That is what we found. If they are developed simply as another government program with limited funding, they tend to go away as soon as the funding runs out.

The current trend towards the development of the electronically distributed workplace, as we refer to it, is increasing at a very, very rapid rate. We are now finding in California that some of the white-collar workers actually moving offshore to some Asian countries because of labor rates.

One of the things that we feel could happen with tele-work centers is we could bring some of that work back. Tele-work centers also can be in a community location for the electronic delivery of government service, thus providing more open access for larger groups of citizens and lowering the cost of government. This is especially true for rural or geographically isolated areas and we are beginning some experiments looking at this in California, and I conclude my comments with that to leave more time for questions. Thank you.

Mr. McMillen. Thank you very much.

[The prepared statement of Dr. Grantham follows:]

HR 5082: To Promote the Use of Telecommuting

Testimony of Dr. Charles E. Grantham
University of San Francisco, July 23, 1992

My testimony is based on several sources of data. I have been supervising an applied research program to investigate the emergence of the electronically distributed workplace for over two years. My work, and that of my colleagues and students, forms the basis for this testimony. Our studies have ranged from traditional attitudinal research to field studies of experiments in Japan and Europe. We have conducted several projects and interviewed hundreds of telecommuting employees and their managers. We have also met with several key business leaders and journalists who are interested in this emerging labor trend in the United States.

1. Comments on HR 5082

HR 5082 proposes to establish an 'Office of Telecommuting' within the United States government. It is my opinion that this office could serve a beneficial function to coordinate and inform various Federal efforts now beginning. These efforts range from Department of Transportation demonstration projects to the National Research and Education Network. There is little credible data to support policy formation in this area. Significant leverage of funds can be achieved through closer coordination of Federal and State agencies, for example, correlated employment and environmental impact data.

Telecommuting, and telework centers have an impact on several public policy areas simultaneously: energy, environment, transportation and labor are the most significant. Federal and State agencies, and most significantly the private sector, have no single point of contact for information regarding current policy, effects and lessons learned from other groups. Other Congressional offices, like the Office of Technology Assessment could leverage their work by having an accessible inter-agency channel to disseminate their knowledge.

There is an overwhelming trend toward the emergence of the 'electronically distributed workplace'. By some calculations somewhere between 20-25% of the current US workforce participates in informal and formal telecommuting behavior. Our won research has shown that this way of working is of significant size anywhere the workflow will allow it, and is always present even where there are no formal programs. This trend will continue as technology infrastructure becomes more ubiquitous and cost pressures continue the corporate downsizing trend in the US. US industrial competitiveness can be improved by significantly expanding the use of these work options. Increases in productivity and creativity that we have documented can be sustained over long periods of time. U.S. workers could begin to import work from other countries that they are uniquely qualified to do, such as software design, information brokering and other highly symbolic-analytic work.

The technological base to accomplish this is largely in place in the US. The current barrier is primarily sociological in nature and therefore could be positively impacted by the establishment of a centralized focal point at the highest levels of public policy management. The establishment of such an office could also foster more open access to governmental services for all citizens by promoting increased use of the telecommunications network to deliver government services.

2. Developments in California

The State of California has been one of the leaders in the exploration of using telecommuting and telework centers. This has been due largely to creative public management and adoption and implementation of environmental ordinances mandating changes in employee travel patterns. The first, and most successful telecommuting program, was the California State employees pilot program begun in late 1989. The program is still running with several hundred employees participating. In fact, telecommuting has become a normal way of working for these employees. More recently the use of telecommuting has spread from the Los Angeles area government in 1990 to several county governments in 1992. The results of these trials are consistent; productivity goes up, net costs of running government go down. Employees report increased levels of work satisfaction and telecommuting type options appear to decrease rates of key personnel turn over.

The potential negative effects of isolation and managerial resistance have been demonstrated to be real and of concern, but can be corrected. Telecommuting only highlights both the strengths and weaknesses of existing management practices, and more specifically, managers. Good workers and managers thrive in these programs as they do otherwise. Poor workers and ineffective managers tend to dislike these programs, are resistant to change and stand in the way of implementation. They do this because these weaknesses become more critical as factors in the daily administration of the distributed job and are more visible. Our experience has been that training for both employees and managers can help to over- come these issues. Also, telecommuting appears to have an optimum schedule of 1.5 to 2.5 days per week.

Interestingly, these public sector developments have proceeded at a faster pace than in the private sector. Our own research shows that this is primarily due to local governments being more driven to increase levels of service in a resource- scarce environment. The most exciting possibilities are those which involve the integration of governmental service delivery and educational programs into telework centers. These centers become in essence, multi-service community centers with access to sophisticated technology which is uneconomical for delivery to residences.

Increasingly, employers are implementing programs. In our research for this testimony, we found employers in California with formal telecommuting programs who declined to reveal details of their programs. When questioned as to why, they simply replied that they found a competitive advantage, especially among highly paid employees, and do not want to reveal details to their

competition. We have also found that the fastest growing segment of industry to make use of telecommuting is small business. Programs do not need to be as formal and feedback is much quicker for enterprises with 100 or fewer employees.

Currently, there are several telework center demonstration projects underway, or planned, in California. The most relevant are the centers in Southern California sponsored by the State government in cooperation with local telephone companies. One is located in Riverside and has a capacity for over 50 employees. The other is in neighboring San Bernadino and can handle approximately 15 employees. It is too early yet to formally evaluate the outcomes of these demonstrations. Final data will not be available until November 1992. However, in our opinion, some tentative conclusions can be reached:

- -- Good business planning must accompany these ventures if they are to be a commercial success.
- -- Marketing the business benefit to employers is critical and often neglected.
- -- Design of telework centers to maximize individual worker productivity and comfort, will only perpetuate the negative social isolation factor found with telecommuters.

Two additional demonstration telework centers are planned for Northern California in the Greater Bay Area. These centers are a public private partnership involving US Department of Transportation, California State and private sector funding. These projects are in the early planning states with no site selection at this time. However, a key difference is found in these centers as opposed to several others we have examined. One of the key criteria for evaluation is the demonstration of business effectiveness of the centers and preparation of a plan to commercialize the work option represented by these centers.

Lastly, we have found an increased interest among product suppliers for telecommuters and telework centers in recent months. We believe this development signals a shift in attitude in the business community. Instead of seeing telecommuting as another human resource management issue, and therefore a cost center; product developers in the software, hardware and office appliance industries are seeing a market opportunity, a revenue generator. This is a positive market indicator.

3. Summary of Qualifications

Dr. Grantham received his Ph.D. in Sociology from the University of Maryland in 1980. Since that time he has been engaged in research and development work seeking to integrate new communications technologies into the workplace in an effective manner. He has served as Executive Director for Research and Development with a Regional Bell Operating Company, and a Senior Business Analyst with a computer manufacturer.

He has published three books in the areas of technology and human Communications systems and over a dozen technical articles in this area. Dr. Grantham was a founder of the TeleNetWork, a volunteer advocacy group based in San Francisco, which promotes the increased use of telework options in the private sector. He is an Associate Professor of Organizational Studies at the University of San Francisco, and Director of the Institute for the Study of Distributed Work.

Currently, he is supervising an extensive applied research project examining productivity and telecommuting, design of telework centers and software design. His focus is the public policy impact of these trends, especially the delivery of government services via the electronic communications network. He is also preparing a manuscript for Van Nostrand-Rheinhold "Tools of Change" describing the organizational management issues surrounding the evolution of the distributed workplace that will be published in late 1992. He is also a founding board member of the Association for Software Design.

4. Conclusions

Our principal conclusion is that people are making resource utilization choices with their own time. People are choosing to use their time in ways that maximize their own quality of life. They will not commute inordinate amounts of time; nor will they continue to engage in work practices which they find extremely stressful and injurious to their families and community, when they have options. Telecommuting and telework centers are ways of working which allow people to increase the quality of their lives.

a. Telecommuting increases productivity of white collar workers, on average, 16%. These gains are sustained over 1 year period. Further increases appear through work re-engineering efforts. There are positive environmental impacts due to decreased air pollution and traffic.

b. There can be negative effects due to social factors. Social isolation from other employees and lack of visibility to managers can result. Use of telework centers can mitigate this effect.

c. Initial resistance to use of telework options comes from lack of adequate management skills, knowledge and training, selection procedures and work re-design. These can be overcome in most cases with training and transition planning.

d. Telework centers need to be developed as a community business strategy, not as a public subsidy. Business and marketing plans, adequate capital and effective management are required to make them successful.

e. The trend toward use of the "electronically distributed workplace" will accelerate due to a confluence of environmental, traffic congestion and employee quality of life pressures and entry of more 'disabled workers' into the workforce.

f. Telework centers can become a community location for the electronic delivery of governmental services, thus providing more open access for larger groups of citizens and lowering the cost of government. This is especially true for rural or georgraphically isolated areas.

g. The United States lags Japan and Europe in the adoption of these alternative work styles. Telecommuting and telework centers provide an opportunity to increase our competitiveness through use of the 'electronic highway' now beginning deployment in the United States.

5. Recommendation

We strongly recommend that HR 5082 be passed.

Mr. McMILLEN. Mr. Dillon.

STATEMENT OF JOHN W. DILLON

Mr. DILLON. Good morning, Mr. Chairman, I am representing C&P Telephone Company of Maryland, as well as our regional company, Bell Atlantic. I appreciate the opportunity to provide information and share some of Bell Atlantic's experiences with telecommuting. Telecommuting and telecommuting centers are ideas whose time has come and we certainly enthusiastically support the concepts of H.R. 5082.

Let me briefly address three areas. First, the telecommunication infrastructure available to support telecommuting and tele-work centers; second, some benefits that are derived from telecommuting and tele-work centers; and third, share some Bell Atlantic experiences with telecommuting.

First, regarding telecommunications infrastructure. Let me assure you that the telecommunication network is in place and the technology and the expertise to support telecommuting and telework centers is there today. It is available because Bell Atlantic and Maryland have an aggressive construction program to give us the necessary technologies.

In Maryland alone, we invest over $1 million a day in our network. In the whole Bell Atlantic region, we invest over $6 million a day in our network. Let me mention two of these technologies. First, digital switching which replaced the older analog switches. This switch uses simple electronic signals to communicate at very high speeds with high quality and it provides a broad array of advanced services from voice mail to video on demand.

In Bell Atlantic, in our region, 10 million of the 18 million access lines are served by digital switches and that number is growing at 1 plus million a year. In the State of Maryland alone, 1.4 million of the 1.7 million access lines, or 82 percent are served by digital switches.

The second technology is fiber optics which provides high speed, high capacity, high quality services. In the Atlantic region, we have deployed 750,000 miles of fiber optic cable. In Maryland, 93 percent of our interoffice facilities are connected by fiber optic cable. Those are the facilities that connect two switching offices.

Other technologies, such as Signalling System 7, Integrated Service Digital Network, commonly referred to as ISDN is also available and are there to support telecommuting and tele-work centers. There is some other detail in my written testimony that I have submitted to the committee.

Let me share with the committee one example of how these technologies work together. Right here in Washington, a D.C. insurance carrier, Group Health Association is using the first fiber optic ultrasonograph network in the country. That allows radiologists in one Group Health site to look at sonograms being produced in another site.

Obviously, this is a more efficient use of sonography by not having to staff each site. This will reduce health care costs which is a major concern in our country as we all know. So you can see that

the potential of telecommunications technology to help address the sizable problems is great.

Certainly telecommuting and tele-work centers also clearly have the potential to positively impact societal problems. We can meet the needs of the Federal Government for telecommuting service such as tele-work centers. We would do that just like we would do for any other business that comes into our region. We are used to meeting requirements for businesses. We can get any tele-work center up and running in a matter of weeks. Even if there is more technically complex requirements, we can meet those requirements in 6 months or less. The bottom line is we are ready and able to meet your requirements for tele-work centers.

Let me touch on a few of the benefits of telecommuting and tele-work center. Bell Atlantic and such companies as Arthur D. Little have done research on the potential of telecommuting. In Bell Atlantic, based on such factors as geography, job descriptions and other demographics, we have determined that there are 900,000 to 1 million telecommuters today in the Bell Atlantic region and it is growing at 10 to 20 percent annually. You take these 900,000 telecommuters; we estimate there would be a savings of roughly 100 million gallons of gasoline annually by these 900,000 to 1 million telecommuters.

Arthur D. Little estimates that at a level of 6 million telecommuters nationwide you would reduce pollutants by 6,400 tons of hydrocarbons, 2,300 tons of carbon monoxide and 2,300 tons of nitrogen oxide. It is clear that telecommuting and tele-work centers can support national programs like the Clean Air Act.

And finally, let me comment on the Bell Atlantic experience with telecommuting. We can talk to the two-phase pilot program within Bell Atlantic. The first phase included 50 Bell Atlantic managers in the District of Columbia, Maryland and Virginia who worked out of their homes, maintaining contact with their office and customers using telephone, voice mail, electronic mail, personal computers and modems and fax machines. The common thread amongst all these telecommuters was that they produced and/or analyzed information. That is their job.

This first phase of the Bell Atlantic trial enabled us to gain some valuable experience. The first thing that we learned was the traits and skills that are necessary to be a telecommuter. Let me just check off some of the things that we found. They have to be trustworthy, self-disciplined, accountable, self-motivated, good performers, and comfortable with a lack of structure. We learned that from our first phase.

Another thing we learned was what services and applications are necessary to support telecommuters. And those are the telephone, the voice mail, electronic mail, et cetera.

In the second phase we added 65 managers to our existing group. Those people came from Pennsylvania, New Jersey, Maryland and Virginia. Some of the findings of the second phase were quite interesting. Employees who were telecommuters out of this group described their productivity as increasing 15 percent. Supervisors of these telecommuters saw the performance of 25 percent of these telecommuters improve, and keep in mind that these telecommuters were good performers going into the program.

Telecommuters felt more in control of their lives, both at home and at work. They all said that morale increased and stress decreased. We found that they gained an average of 2½ hours a day. This is time that they spend getting ready to go to work, in traffic, commuting and coming back home. In 6 months, 50 telecommuters saved 100,000 vehicle miles and 5,000 gallons of gasoline.

Because of this positive experience that we in Bell Atlantic have had with our pilot, we have agreed upon a basic company policy regarding telecommuting. That policy has been written up and in fact is at the printers right now and is within weeks of being released within the corporation. That basically that policy will encourage managers and other groups of employees——

Mr. McMILLEN. John, will you try to summarize?

Mr. DILLON. I am almost finished here. All in all, this pilot was a success. In conclusion, let me say that H.R. 5082, Telecommunications Act of 1992 is good for employers, good for employees, good for the government, good for the environment, and good for the economy.

Again, we enthusiastically support the concept.

Mr. McMILLEN. Thank you very much.

[The prepared statement of Mr. Dillon follows:]

TELECOMMUNICATIONS AND FINANCE SUBCOMMITTEE
OF
THE HOUSE ENERGY AND COMMERCE COMMITTEE

Testimony of John W. Dillon
Vice President of External Affairs
Chesapeake and Potomac Telephone Company of Maryland

July 29, 1992

Good morning, Mr. Chairman, and Members of the Subcommittee. My name is John Dillon and I am Vice President of External Affairs for the Chesapeake and Potomac Telephone Company of Maryland. My company provides telecommunications services to 3 million customers in Maryland, and serves all but one small corner of the state. Today, I am representing C&P of Maryland, as well as our parent company, Bell Atlantic, which provides network telecommunications services in Maryland, Virginia, West Virginia, the District of Columbia, Delaware, Pennsylvania and New Jersey.

I appreciate the opportunity to offer information and to share some of Bell Atlantic's experiences with telecommuting. We feel that telecommuting is both a timely and far-reaching issue that deserves immediate consideration.

I would like to address 3 aspects of telecommuting today:

* The infrastructure required to support a telecommuting idea like telework centers;

* The potential benefits of telecommuting to employers, workers, and society; and

* Bell Atlantic's hands-on experience with telecommuting.

THE TELECOMMUNICATIONS INFRASTRUCTURE

First, I want to assure the Subcommittee that Bell Atlantic has the telecommunications network in place to support telework centers. The technological facilities and expertise needed to make telework centers a reality exist <u>today</u> in Bell Atlantic.

This is true because of the investment my company has made in the Bell Atlantic region's telecommunications infrastructure. In Maryland alone, we spend over $1 million per day, every day, to modernize and expand the network. In Bell Atlantic, we invest more than $6 million per day.

This aggressive capital program has brought us the technologies that support telecommuting. Allow me to outline them briefly:

* Digital switching. By converting the information to be transmitted to a simple series electronic signals that represent the information being sent, digital switching allows for high-speed transmission. In addition, digital technology improves transmission quality, and makes possible a broad array of advanced services, ranging from services like voice mail to video on demand.

Over 10 million of the 18 million customer lines in the Bell Atlantic region are served by digital switching equipment, and this figure is growing by more than 1 million lines per year.

* Fiber Optics - provides high capacity and high speed transmission as well. Fiber technology also improves transmission quality, provides greater security, reduces maintenance expense and offers virtually unlimited bandwidth.

To date, it has been cost effective for Bell Atlantic to deploy more than 750,000 miles of fiber throughout the region.

* Signalling System 7 - is the dedicated signalling network which frees the regular telephone message network for full customer use of available bandwidth. SS7 provides more flexibility for advanced customer services, like call forwarding and call screening services. It also provides for a more efficient network, greater security and facilitates the introduction of other modern technologies.

96% of the Bell Atlantic network will be equipped with SS7 by the end of 1992.

* Integrated Services Digital Network - also called ISDN - is a telecommunications architecture that allows the transmission of voice, data and image services over a single line. Without ISDN's integration capability, customers with multiple service needs would require separate lines for each service used.

We are continuing to make ISDN available throughout the region. By 1994, 87% of Bell Atlantic's access lines will be ISDN-capable.

* Synchronous Optical Network - known in the industry as SONET - allows for the connection of multiple transmission systems, and will bring international standards to the field of fiber optics transmission. SONET will insure network diversity and minimize the impact of any network outage.

Bell Atlantic has just begun its deployment of this technology and plans to move ahead aggressively with it.

Let me give you one quick example of the way these technologies work in concert to provide the public with new and exciting opportunities.

In the Washington metropolitan area, an insurance carrier called the Group Health Association is now using the first fiber optic, full motion ultrasonograph network in the country. The network allows radiologists in Washington to use the clarity of image fiber provides to look at sonograms as they are being produced at other group health sites in the Washington area. The impact is that they use sonographers much more efficiently and no longer have to staff each group health organization in the area.

This application is a particularly effective use of the technology. Here telecommunications is being applied not only in a potentially life saving situation, but also in a way that addresses a critical national problem by helping to reduce health care costs.

The potential of telecommunications technology to help address a wide range of societal problems is great. And, I am confident that we can meet the needs of the federal government for telecommuting services.

Basically, the facilities required for a telework center are analogous to those of any large business opening a new branch office. And we are accustomed to meeting those requirements.

Upon customer request, and depending upon the technology required, we can get a telework center up and running in a matter of weeks. Even the more technically complex requirements can be met in almost any area of Bell Atlantic in 6 months or less. That means providing all of the telecommunications services, from the network connections to installing the cameras and microphones for a video conferencing center.

Maintaining a telecommunications infrastructure to support telecommuting is critical, because our research indicates that the demand for telecommuting opportunities will increase. I'd like to expand on my second point: the benefits of telecommuting.

BENEFITS OF TELECOMMUTING

Bell Atlantic's research on the potential for telecommuting, in conjunction with work done in February of 1991 by Arthur D. Little, Inc., indicates the following:

* Number of potential telecommuters in the Bell Atlantic region: 12 million;

* Potential environmental savings, if only 5% of the total or 600,000 workers were to telecommute: 73 million gallons of gas annually;

* Potential annual reduction in pollutants: 6,443 tons of hydrocarbons; 38,000 tons of carbon monoxide; 2,300 tons of nitrogen oxide.

Nationally, the Arthur D. Little study asserts that telecommunications can allow 6 million commuters to work at home, and can eliminate almost 13 million business trips annually through teleconferencing.

As a company that is intensely interested in telecommuting, Bell Atlantic has done more than research the issue: we have begun to practice what we preach. And that brings me to my third point: Bell Atlantic's experience with telecommuting.

BELL ATLANTIC EXPERIENCE

Bell Atlantic has conducted a 2-phase pilot program to test the effectiveness of telecommuting. In the first phase, which lasted 6 months, 50 Bell Atlantic managers who live in the District of Columbia, Maryland and Virginia telecommuted from their homes. They maintained contact with their regular offices by telephone, voice mail, electronic mail via PCs and modems, and fax machines. Each of the managers accepted for the trial held responsibilities that called for the production or analyzation of information. These duties continued from their homes.

From this first phase, Bell Atlantic gained experience in identifying the traits and skills needed to be a telecommuter. We also learned what services and applications are needed. We tested these findings in a second phase, which involved 65 additional managers in Pennsylvania, New Jersey, Maryland and Virginia.

We found the results of our pilot program to be impressive.

* Employees who telecommuted described their productivity and job effectiveness as increasing by an average of 15%. In one case, an employee was able to reduce turnaround time on reports from 10 days to 8 because distractions were reduced.

* Supervisors indicated significant improvement in the performance of more than 25% of the participants, when compared to the performance of the previous year.

* Telecommuters felt more in control of their lives, at work and at home. Their morale increased, and their stress level decreased. Based on this experience, we believe telecommuting can help improve general employee health in the long run, helping us to contain escalating health care costs.

* We have already identified tangible health care cost benefits from telecommuting. In one case, an employee with accident injuries expected to be out on disability leave for 5 weeks, primarily because she had difficulty moving around. But because she was able to telecommute from her home, she was able to return to work in 4 days.

* In another case that developed outside the pilot program, an employee suffering from Chronic Fatigue Syndrome was able to continue working by telecommuting two days a week. By doing so, she was able to conserve her energy and to continue to be productive.

(Anecdotally, these examples may not seem like much of a savings. But Bell Atlantic spends $48 million a year on sickness disability benefits, so we welcome <u>any</u> reduction.)

* Telecommuters gained an average of two-and-a-half hours a day--time they would have spent in traffic. One telecommuter was able to use this extra time to help her balance her work and family responsibilities, <u>and to complete graduate school.</u>

* And finally, we documented transportation savings that reinforce the findings of our earlier research. In 6 months, 50 telecommuters combined to save 100,000 vehicle miles and 5,000 gallons of gas.

The experience we gained in the pilot program has led Bell Atlantic to institute a companywide telecommuting policy. The policy encourages managers and certain other groups of employees to telecommute, wherever functions and businesses conditions permit.

SUPPORT OF H.R. 5082

The results of our telecommuting trial were extremely positive. But I want to point out that the work-at-home environment is not for everyone. Not all employees, bosses or jobs can adapt to the work-at-home situation.

Telework centers as described in H.R. 5082, however, clear some of the obstacles by creating a more traditional office environment in a close-to-home location.

H.R. 5082 also creates economic benefits that can be seen both globally and in local neighborhoods. In the global marketplace, telecommuting can help the United States by increasing employee productivity and thereby improving our competitive advantage. And locally, H.R. 5082 calls for telework centers to be located in economically disadvantaged areas. Those areas will benefit through revitalized commercial districts and, potentially, new employment opportunities.

CONCLUSION

I will conclude by saying that C&P of Maryland and Bell Atlantic fully support The Telecommuting Act of 1992, because it makes efficient use of the telecommunications infrastructure by employing information highways instead of asphalt highways; because the implications on the environment, the economy, transportation costs, productivity, worker morale and quality-of-life are clear; and because our own experience shows that telecommuting benefits both employer and employee.

Thank you again for the opportunity to offer Bell Atlantic's perspective on telework centers. We are eager to help make the concept a reality.

STATEMENT OF MARSHA L. FULLER

Mr. McMILLEN. Ms. Fuller.

Ms. FULLER. Good morning, Mr. Chairman, members of the subcommittee. I am here today in strong support of this bill. As the originator of the Federal Alternative Worksite Center concept and as Project Manager of the Hagerstown Alternative Work Center, I am particularly excited by the prospect of funding for several telecenters around the metropolitan Washington region.

When I first came up with the idea for tele-center for Federal employees a little over a year ago, I approached Dr. Wendell Joice, Co-Director of Flexi-Place, who gave me a thumbs up on the idea. I then contacted Doug Mathias in Congresswoman Byron's office who has been instrumental in getting this project to the point it is today. We realized there was no catchers mitt in the Federal Government to receive a proposal of this kind.

After much work, Doug identified the Cooperative Administrative Support Unit Program as the best group to handle this because it works to remove barriers between various units of government. To quote from the CASU brochure, "The CASU program establishes the legal and administrative framework for offices to share services they would otherwise have to provide individually." Obviously this was the group we wanted.

With a great deal of support from the Hagerstown and Washington County governments and the business community, we approached the CASU program officials in December and the rest as they say is history. We can only say at this point that the response of the Federal Government to this private sector community-based initiative has been heartwarming.

Many people have incorrectly believed that this project is like the Kevin Costner movie, "Field of Dreams". If you build it, they will come. I suppose we all wish life were that easy, but the truth is there is still an enormous amount of work to be done to set the Federal policies in place and to cement the partnerships that will allow Federal, State and local employees to work at these centers.

The Alternative Work Center project will create a satellite office in downtown Hagerstown, Md. for Federal employees who make the 150 mile round trip commute daily to the metropolitan Washington area. This office, operating under the "Guidelines for Pilot Flexible Workplace Arrangements" issued by the Human Resources Committee of the President's Council on Management Improvement will be a prototype of an extended work force site operating through the application of technology. Flexi-Place represents a decision to combine the resources of telecommunications with working environments that heighten employee well-being and productivity, while reducing the overall costs of government.

To illustrate, a DOT project officer would report to the Hagerstown office, read mail from the electronic screen, interact with coworkers by way of electronic bulletin boards, consult with his supervisor, and proceed with productivity assignments in the same manner as would be done in Washington, but with less expense to the Agency for office space and less hassle for the employee in travel.

In addition, those agencies with one or two person offices already located in the Hagerstown area would be able to incorporate their personnel and accompanying service contracts into the tele-center for more efficient, economic use of their administrative dollar.

Those agencies whose field representatives are presently operating without benefit of fixed office space at all would also be able to fold into the center. This telecenter would provide a satellite office in the form of a consolidated work facility. There will be work stations with adequate electrical and telecommunications connections to support needed hardware, including a personal computer with modem, and printer access at each work station. Heating, cooling and lighting will meet standards approved under the Annotated Code of Maryland.

Employees in a variety of job categories from basic computer entry to managing functions in any of the many Federal, State or local agencies could be eligible for employment in Hagerstown. Approval from the supervisor would be required for project participation. The employees assigned to this office would be able to complete regular tours of duty in Hagerstown, meet the same job tasks and responsibilities as in their Washington office, but avoid the commute they are presently making. The Alternative Work Center prototype of flexible work sites exemplifies current trends in labor and technology and establishes an excellent example of government interaction between the Federal Government and a local community.

There are currently many Federal employees living in the Hagerstown area working in Washington who have already indicated an interest in using the center to avoid the commute which adds up to 4 unpaid hours to each employee's work day. More calls are coming in everyday for people wanting to get more information or enlist as a participant. The project appears to benefit both the community and the Federal employees. Results from just the preliminary survey indicate there is a strong demand for this tele-center. The survey sampling of Federal employees in the area last year showed that just 84 of these people commute over 2.6 million miles per year.

The Hagerstown project fosters cooperation between all branches of government, Federal, State and local. Not only will Hagerstown be the First Alternative Work Center, it will also be the first intergovernmental cooperative administrative support unit. This very effective program will promote an important public/private partnership.

Our task groups are presently well under way in completing the goals which will enable us to make our proposal to the President's Council on Management Improvement at their September board meeting. The dream is becoming a reality.

Mr. McMillen. Thank you, very much.

[The prepared statement of Ms. Fuller follows:]

Fuller Consulting Services

July 24, 1992

Mr. Chairman, Committee members, I am here today in strong support of this bill.

My name is Marsha L. Fuller, of Fuller Consulting Services, 912 Oak Hill Avenue, Hagerstown, Maryland. I am the originator of the Federal Alternative Worksite Center concept and the Project Manager of the Hagerstown Alternative Work Center.

The implementation of telecenters (satellite offices) for public and private employees as an alternative to the traditional office setting offers the most reasonable solution to the problems faced by employers and employees of today, as the United States seeks to adapt to its changing demographics.

We find ourselves plagued by the dual specters of infrastructure overload and environmental pollution. The long commutes faced by millions of American citizens every day are costly in terms of time, lives and money. It is not unusual for people in rural areas to spend three hours on the road each and every workday. Traffic accidents cause injury and death to thousands, and cost the state millions of dollars in emergency response equipment, personnel, and trauma centers.

Air pollution is overwhelming. As we meet here today, many state legislatures are debating the tightening of tailpipe emission standards for our nation's automobiles as they seek to comply with the Clean Air Act.

The repair and expansion of our nation's highways will cost far more money than would the expansion of our "telephone highways." Why not expand the telecommunications infrastructure to meet these needs instead?

Use of telecenters would allow our economy to grow without exacerbating existing problems. Benefits to the use of telecenters are:

* Increased productivity - workers not stressed and tired from a long commute; improved morale from cumulative benefits; less sick leave needed; improved management because clear goals will be set; less office distractions

* Reduced costs -
For the employer: less expensive office space due to cheaper rents in rural area; reduced rates for employee parking; reduced health insurance premiums (less stress equals less illness); less sick leave used
For the employee: reduced automobile maintenance and depreciation costs, insurance and gasoline costs, less child care expense
For the nation: infrastructure expansion; reduced use of emergency response teams; economic revitalization of rural areas through creative re-use of existing commercial properties

* Skill Utilization - employee retention; costly new employee training unnecessary; employees with temporary disabilities able to continue working

* Increased Job Applicant Pool - employers able to recruit scarce talent, as well as mature, experienced workers, the handicapped and those in rural communities

* Increased Stability of Work Force - distance to work a major factor in relocating and early retirement

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* Access to Jobs - older Americans, the handicapped, mothers with young children or elderly parents, and those in rural areas able to apply for jobs previously closed to them because of their inability to commute

* Family Care - parents able to spend more time with their children and involved in their children's schools; handicapped or elderly family members not needing to be moved to nursing homes for care; more parental supervision reduces opportunities to become involved in alcohol, drug abuse and teen pregnancies

* Quality of Life - improved health, less stress; less injury and death from traffic accidents (Highway accidents cost 47,000 lives per year and vehicle emissions lead to 30,000 deaths.)

* Neighborhood Safety - less burglaries, assaults and abduction of children

* Community Participation - more time to volunteer for, and be involved in, community projects and organizations

* Rural Economic Development - increase in local economy from employees frequenting local restaurants, retail establishments and service businesses

* Environmental Pollution - more open space not being developed for highways, parking lots and office buildings; less air pollution and needed compliance with the Clean Air Act (An Arthur D. Little, Inc. study, "Can Telecommunications Help Solve America's Transportation Problems?" predicts a pollution savings of $1.23 billion.)

* Urban Crowding - more even income distribution as people with higher paying jobs are free to move away from urban areas

* Energy Consumption - reduces America's dependence on foreign oil

* Traffic Mitigation - alleviates traffic jams on major arteries in and out of metropolitan areas

* Reduced Strain on Infrastructure - reduces need to expand roads, Metro, MARC train or parking lots

Many see telecenters as improving family life by encouraging the sharing of housework between parents and by enabling fathers to spend more time with their children. It also allows families to put down roots in their communities as they move less frequently for employment reasons.

This is what America is about - a sense of community, clean air to breathe and open space uncluttered by highways.

Some skeptics express concern about supervisors not being able to manage their employees by eyeballing them. Indeed, telecenters will require a change in how America manages its workforce. Managers will learn to manage by results rather than by counting heads. As corporate America becomes leaner, it is dropping many middle managers from its payrolls. Those managers who remain will learn to empower and to inspire their employees. Employees will learn independence, a laudable American trait, and become more productive with their work time. This increased productivity will, in turn, enable us to increase our standard of living without increasing the inflation rate.

When we make public policy, we know that it must change incrementally. Telecenters provide an opportunity to make these changes with little effect on the infrastructure. It appears to represent a rational approach to public policy making for America's workforce.

As the originator of the federal alternative worksite center concept, and as Project Manager of the Hagerstown Alternative Work Center, I am particularly excited by the prospect of funding for several telecenters around the metropolitan Washington region.

And, it is almost with a sense of parental pride that I note that the community of Winchester, after some initial assistance from us, has followed closely in our footsteps to create a spin-off of the original Hagerstown project. If, as is said, imitation is the sincerest form of flattery, then we are very flattered indeed.

When I first came up with the idea for a telecenter for federal employees a little over a year ago, I approached Dr. Wendell Joice, co-Director of Flexiplace, who gave me a thumbs-up on the idea. I then contacted Doug Mathias in Congresswoman Byron's office who has been absolutely instrumental in moving this project to the point where it is today. Doug and I initially realized that there was no "catcher's mitt" in the federal government to receive a proposal of this kind. After much work, Doug identified the Cooperative Administrative Support Unit Program (CASU) as the best group to handle this because it works to remove the barriers between various units of government. To quote from the CASU brochure, "The CASU program establishes the legal and administrative framework for offices to share services they would otherwise have to provide individually." Obviously, this was the group we wanted.

With a great deal of support from the Hagerstown and Washington County government and the business community, we approached the CASU program officials in December and the rest, as they say, is history. We can only say, at this point, that the response of the federal government to this private sector/community based initiative has been heartwarming.

Many people have incorrectly believed that this project is like the Kevin Costner movie, FIELD OF DREAMS - "If you build it, they will come." I suppose we all wish that life were that easy. But the truth is that there is still an enormous amount of work to be done to get the federal policies in place and cement the partnerships that will allow federal, state and local employees to work at these centers.

The Alternative Work Center project will create a satellite office in Hagerstown, Maryland, for federal employees who make the 150 mile round trip commute daily to the metropolitan Washington, DC, area.

This office, operating under the "Guidelines for Pilot Flexible Workplace Arrangements" (Flexiplace) issued by the Human Resources Committee of the President's Council on Management Improvement, will be a prototype of an extended workforce site operating through the application of technology. Flexiplace represents a decision to combine the resources of telecommunications with working environments that heighten employee well-being and productivity, while reducing the overall costs of government.

To illustrate, a DOT Project Officer would report to the Hagerstown office, read mail from the electronic screen, interact with co-workers by way of electronic bulletin boards, consult with his supervisor and proceed with productivity in assignments in the same manner as would be done in Washington, but with less expense to the agency for office space and less hassle for the employee in travel.

In addition, those agencies with one or two person offices already located in the Hagerstown area would be able to incorporate their personnel and accompanying service contracts into the telecenter for more efficient and economic use of their administrative dollar. Those agencies whose field representatives are presently operating without benefit of fixed office space at all would also be able to fold into the center.

This telecenter will provide a satellite office in the form of a consolidated work facility. There will be work stations with adequate electrical and telecommunications connections to support needed hardware, including a personal computer with modem and printer access at each work station. Heating, cooling and lighting will meet standards approved under the Annotated Code of Maryland.

Employees in a variety of job categories from basic computer entry to managing functions in any of the many federal, state or local agencies could be eligible for employment or deployment in Hagerstown. Approval from the supervisor would be required for project participation. The employees assigned to this office would be able to complete regular tours of duty in Hagerstown, meet the same job tasks and responsibilities in Hagerstown as in their Washington office, and avoid the commute they are presently making. The Alternative Work Center prototype of flexible worksites exemplifies current trends in labor and technology, and establishes an excellent example of governmental interaction between the federal government and a local community.

There are currently many federal employees living in the Hagerstown area, working in Washington, who have already indicated an interest in using the Alternative Work Center to avoid the commute which adds up to four unpaid hours to each employee's work day. More calls are coming in every day from people wanting to get information or enlist as a participant. The project appears to benefit both the community and the federal employees. Results, from just the preliminary survey, indicate that there is a strong demand for this telecenter. The survey sampling of federal employees in the Hagerstown area last year showed that just these 84 people commute over 2.6 million miles per year.

This project also unifies all branches of government - federal, state and local. Not only will Hagerstown be the first Alternative Work Center, it will also be the first intergovernmental Cooperative Administrative Support Unit. This very effective program will promote an important public-private partnership.

This project has received a great deal of local support. The Mayor of the City of Hagerstown has been very supportive of the concept since the idea first emerged over a year ago. City officials have also stayed informed and have requested intermittent updates on its progress. The Hagerstown-Washington County Economic Development Commission has and continues to provide assistance to the development and advancement of the project. Of particular value has been the Downtown Assessment District who have assisted with the foundation efforts in seeking out owners of available office space. This project is an important economic development tool for a rural area such as ours.

The office of U.S. Representative Beverly Byron and U.S. Senator Barbara Mikulski, Maryland State Delegates and Senators, and the Washington County government have all given support. The Hagerstown business community is also strongly in favor of establishing the Alternative Work Center. Several business owners have already expressed a willingness to negotiate the free use of office space, some organizations are donating seed money for initial operating costs and many have offered contacts and information to assist in the groundwork.

Our Task Groups are well underway to completing the goals which will enable us to make our proposal to the President's Council on Management Improvement at their September board meeting.

The dream is becoming a reality!

Mr. McMillen. Mr. Risse.

STATEMENT OF EDWARD M. RISSE

Mr. Risse. I am Ed Risse, principal of Synergy Planning, Inc. In Linda Risse's testimony, from Synergy Management, she defines tele-work, telecommuting, satellite and neighborhood work centers. And we recommend that these broadly accepted definitions be used to avoid confusion. We are very pleased to note in Congressman Markey's introduction that he did in fact use those definitions.

What we want to underscore is that telecommuting is a subset of a broader category of tele-work, and that tele-work and other tele-tools are a reflection of an integral part of and a driving force behind the third major shift in the way man does work.

As noted in Synergy Management's testimony, the growth of tele-work and telecommuting is primarily an organization culture and a perception, not of technology or a telecommunications issue. The benefits of tele-work and telecommuting to the employer and employee are many, are summarized in the Synergy Management testimony. There are two over arching reasons that the benefits of tele-work and telecommuting are important.

For many objectives, such as reaching our national clean air goals, employing the disabled, reducing traffic congestion, tele-work and telecommuting is a benefit to both the employer and the employee. Tele-work is something that is—is not something that must be imposed in order to achieve a public good.

And second, tele-work is happening. As noted earlier, tele-work is part of a fundamental change that is affecting our regional economic competitiveness, our prospect for national prosperity. It is affecting our physical environment and our social structure. We need to understand and take optimum advantage of this fundamental change.

The problems we hear most with respect to tele-work and telecommuting are really excuses. While not all jobs and not all workers and not all organizations are suited for tele-work, the important thing is those jobs, those workers, and those organizations that are well suited for tele-work are by and large the jobs, workers, and organizations most critical to maintaining regional competitiveness and therefore regional and national prosperity.

Tele-work touches so many areas of Federal interest, transportation, energy, environment, commerce, technology, housing health, education and labor, in addition to government operations, and that only indicates a few.

The growth of telecommuting and the growth of telecommunications infrastructure are parallel and interrelated but not interdependent events in the contemporary first world. Much more important than the infrastructure issue is the critical issue of pattern and density of land use which we deal with at some extent in our testimony.

Synergy Planning, Inc. supports the passage of H.R. 5082 and, further, has several suggestions for the refinement and guidance for implementation of Federal tele-work, telecommuting and tele-work center policy contained in this testimony.

First, the Federal tele-work, telecommuting research information exchange and development of policy recommendations should be made the responsibility of a permanent interagency task force. This echoes some of the concerns expressed by Mr. Hoyer earlier about the location, and our testimony and that of several others suggests some alternatives that might work well in this area.

Second, any new Federal initiative in tele-work, telecommuting should be a partnership of ongoing efforts. This is an area where we don't necessarily need Federal leadership. Federal entry into tele-work center development should be carried out with caution.

There are fundamental public policy objectives that tele-work, telecommuting and tele-work centers can support. These include regional mobility, sustainable environment, prosperous economy and a stable society. The most important contribution that tele-work centers can make is to help rationalize the pattern and density of land use at a regional, subregional, village and neighborhood level.

The pattern of land use is what drives us to spend all that time in commuting in the first place. The experience gained in the operation of well-conceived and well-managed tele-work centers can contribute to fundamental restructuring that will be required in the Federal workplace.

And finally, Synergy Planning recommends several specific parameters for successful implementation of tele-work centers, a sound business plan, competent management team, commitments from agencies and entities whose employees will be served to pay for the services provided, and most important, optimum location in the region, subregion and especially in the community, the village and in the neighborhood level where those are located.

We appreciate the opportunity to present our views. We have submitted much more extensive testimony and we call that to your attention and we would be happy to answer any questions.

Mr. McMILLEN. Thank you very much.

[Testimony resumes on p. 82.]

[The prepared statements of Ed and Linda Risse follow:]

SYNERGY
Planning

EM Risse
Principal

TESTIMONY BY:

E M Risse, Co-Principal
SYNERGY/Planning, Inc.

BEFORE:

The Subcommittee on Telecommunications and Finance,
Honorable Edward J. Markey, Chairman
Committee on Energy and Commerce
U.S. House of Representatives

CONCERNING:

H.R. 5082, The Telecommuting Act of 1992 and The Implementation of Telecommuting [Telework] Centers in the Workplace

29 JULY 1992 9:30 AM

I. OPENING.

Representative Markey; Members of the Subcommittee; Distinguished Guests;

I am Ed Risse, Principal of SYNERGY/Planning, Inc., and responsible for the SYNERGY/Planning Division. I am a professional planner and resident of the Baltimore/Washington Region.

We appreciate the opportunity to address "H.R. 5082, The Telecommuting Act of 1992 and the Implementation of Telecommuting [Telework] Centers in the Workplace." We believe this hearing addresses an issue of important national concern.

II. INTRODUCTION.

In your letter requesting our presence at today's hearing, you asked that we address:

1) H. R. 5082 and its effects on the telecommunications infrastructure;

2) our background and what our company is currently doing in the area of telecommuting;

3) the costs and benefits to an employer, employee and the community from telecommuting;

4) the effects of telecommuting on employers, employees and the environment, and

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5) be prepared to address questions regarding the problems that arise with telecommuting centers.

In order to most effectively address the issues you raise, we will consider them in a slightly different order.

III. BACKGROUND

SYNERGY/Planning, Inc. has linked multi neo-traditional workplaces to carry out its business since 1989. Our senior staff applies telework in all our efforts. Our support staff is linked by telecommunications from neo-traditional workplaces. Our strategic alliances include national and international nodes, and our tactical partnerships include team members in the Mid-Atlantic and Pacific Rim Regions of the United States.

Two of SYNERGY/Planning, Inc.'s Divisions SYNERGY/Planning and SYNERGY/Management provide services to clients that include Telework and Telecommuting.

SYNERGY/Planning's services and the Principal's qualifications are spelled out in Attachment #1 "Competitive Strategies for the '90s."

The focus of the SYNERGY/Planning Division's interest in telework and telecommuting is the land-use pattern and density/transportation relationship; specifically, the effect of the substitution of telecommunications for transportation on the pattern and density of land use. We have been planning new clusters, neighborhoods, villages and communities based on these principles since 1969.

Personally we have applied telework in our professional work since 1972. I currently serve as the President of Potomac [Mid-Atlantic] Telecommuting Advisory Council, am an active member of the European Communities Telework Forum network and serve on the Governor's Telecommuting and Telework Advisory Task Force in Virginia.

Linda Risse, responsible for SYNERGY/Management, a separate Division of SYNERGY/Planning, Inc., was requested to submit testimony on "how private corporations have used telecommuting." At several points, we will refer to that testimony, separately submitted to the Subcommittee.

SYNERGY/Management's testimony outlines its services to clients. These include implementation of telecommuting programs, non-traditional workplaces and other management strategies to assist clients become more competitive by lowering overhead and increasing productivity and effectiveness.

IV. THE CONTEXT OF TELECOMMUTING AND TELEWORK CENTERS

The SYNERGY/Management testimony on pages 2 and 3 defines, among others, telework, telecommuting and satellite and neighborhood "telework" centers.

We want to underscore that "telecommuting" is a subset of the broader category of "telework" and that "telework" and other "teletools" are:

- a reflection of,
- an integral part of, and
- a driving force behind

the third major shift in the way man does work.

The first change was signaled by the emergence of neolithic trading villages, the second is called the Industrial Revolution. The third fundamental change is now taking place.

Initial patterns of work of human work -- differentiation of production, division of labor, and specialization of trading and markets -- first emerged in neolithic agriculture and trading communities (4000 BC). From the neolithic villages through prehistoric cities, Classic Civilizations, the Middle Ages and the Renaissance, work was done at or close to the residence of the worker.

This historical pattern was shattered by the Industrial Revolution. The Industrial Revolution introduced less expensive transportation and mechanized production and thus created the incentive and necessity for clustering workers in concentrated areas to produce goods and services. Shipping raw materials, food and water as well as finished products over longer distances became the norm. A new pattern of urban areas emerged as industrial centers, and then urban regions grew up at key transportation centers and transfer points.

We are now crafting the third fundamental way work is done: moving work to people electronically. Telework allows new flexibility in work location.

The current change has not yet acquired a broadly accepted name beyond the titles of books describing the sea change -- most notable those by Toffler. [Also see Naisbitt, Peters et.al.]

It is the view of SYNERGY/Planning, Inc. that in the past 36 months there have been accelerating changes taking place in the workplace. These fundamental changes are in response to World-wide economic deflation/recession and growing global economic competitiveness. The technology to support these changes was

brought on line in the 70's and 80's. The world-wide recession that started in the late 80's is now propelling change relying on existing and emerging technology at an increasing rate. Some of the trends have been going on for 20 years but are now accelerating. There are also new forces emerging. These views are supported by other testimony submitted to the Subcommittee.

Telework is powerful, "it has the power to change the character of time and space" -- John Niles, Global Telematics.

Telecommuting is different than telecommunications.

Telecommuting is different than telecomputing.

As noted in SYNERGY/Management testimony, the growth of telework and telecommuting is primarily an organization culture and a perception issue, not a technology or telecommunications issue.

In over 20 years of working with these concepts, I have not encountered a significant technological limitation of telework/ telecommuting. Cultural and perceptional limitations are legion. [This experience is borne out by other testimony submitted to the Subcommittee.]

V. THE BENEFITS OF TELEWORK AND TELECOMMUTING

The benefits of telework and telecommuting to the employer and the employee are many. These are summarized in Exhibits # TWO and THREE of the SYNERGY/Management testimony.

The benefits to the community, the region, the nation and the environment are also very substantial. EXHIBIT # ONE to the SYNERGY/Management testimony spells these out. They involve the social, economic and physical well-being of our society.

We will be happy to answer any questions you have on these benefits.

In addition, we also agree with the unique social, economic and physical benefits to the economically and spacially disadvantaged raised by John Niles, Global Telematics in his Testimony submitted to the Subcommittee on H.R. 5082.

There are two overarching reasons that the benefits of telework and telecommuting are important:

- For many objectives -- such as reaching our national clean air goals, employing the disabled, and reducing traffic congestion -- telework/telecommuting is a benefit to both employer and employee; telework is not something that must be imposed to achieve a public

something that must be imposed to achieve a public good.

- o Telework is happening; as noted earlier, telework is part of the fundamental change that is affecting our regional economic competitiveness and our prospect for national prosperity. It is affecting our physical environment and our social structure. We need to understand and take optimum advantage of this fundamental change.

VI. THE COSTS AND OTHER ADVERSE EFFECTS OF TELEWORK AND TELECOMMUTING

The "problems" we hear most about are really "excuses." They are the excuses put forward by those who fear the impact of the change. They are raised to put off seriously considering telework and telecommuting.

Telework does not fit all jobs, and telework does not fit all workers. If there is a job/worker/manager fit, then the "problems" -- like data security, liability, equipment cost, loneliness, union opposition, transmission capacity, etc. can be solved if done within the context of the organization's culture.

We call your attention to SYNERGY/Management's Testimony page 5 "Caution Concerning Telework/Telecommuting Implementation" for more detail on this issue.

In more than a year of investigation by members of the Virginia Governor's Advisory Task Force on Telework and Telecommuting, the only example of a potential legal, governmental or technological barrier to telecommuting has to do with a possible tax liability under some state statues of an employer not doing business in the state where the employee lives.

An ongoing effort of the Task Force is to follow up every lead for potential barriers outside of management style, perception and organizational culture. ["My boss will not let me take my PC home" is not a technological limitation to telecommuting or telework.]

At a recent U.S. DOT Conference on Telework and Telecommuting, the representative of Pacific Bell which has one of the largest Telecommuting programs in the country and has been a co-sponsor or supporter of many of the major telecommuting programs in the past eight years in California told the participants that Pacific Bell has yet to identify the first Workman's Compensation or other employer liability case arising from telecommuting. Employer liability is frequently cited as "major concern" for telecommuting.

While not all jobs, not all workers and not all organizations are suited for telework, the important thing is that those jobs, workers and organizations that are well suited for telework are by and large the jobs, workers and organizations most critical to maintaining regional competitiveness and therefore regional and national prosperity.

While we do not consider the most frequently referred to "problems" to be a serious impediment to well planned and managed telework and telecommuting programs, we do have serious reservations concerning the widespread application of telework without new and effective ways to guide the future pattern and density of land use in our urban and rural regions.

From the economic development perspective, it is critical that we concentrate on creation of new jobs rather than making jobs mobile through telecommunications. Once we make jobs mobile, they may leave the community, the region or the nation. Telework centers in Jamaica, Ireland and Southeast Asia can perform data entry and analysis far more competitively than centers in Iron Range, Minnesota or Utica, New York. Operators in Kingstown, St. Vincent or Roseau, Dominica can take orders, answer policy holders questions or make reservations more competitively than even those in Norton, Virginia, Salisbury, Maryland or Freeport, Maine.

VII. H.R. 5082 AND ITS EFFECTS ON TELEWORK AND TELECOMMUTING

We support the passage of H.R. 5082 and offer the following suggestions for refinement of H.R. 5082 and guidance for the implementation of Federal Telework/Telecommuting/Telework Center policy:

A. THE FEDERAL CONTEXT

Congressman McMillen and his staff are to be commended for their interest in telework and telecommuting and for introducing H.R. 5082.

Should the Federal government have a direct role in guiding the implementation of telecommuting? We believe the answer is "yes!"

Should there be a primary focus for Federal activity on Telecommuting? Again we believe the answer is yes.

Is NTIA the best location for that focus? Here there may be differing opinions. The current U.S. Department of Transportation Telework and Telecommuting Study authorized by Public Law 102-143 pursuant to legislation introduced by Senator Burns of Montana may provide guidance in this area.

As is also pointed out by others who have submitted testimony, telework touches so many areas of federal interest; transportation, energy, environment, commerce, technology, housing, health, education, and labor in addition to government operations to name a few, perhaps the best course of action would be a permanent joint inter-agency task force with staff drawn from a range of federal research and operating agencies.

Others may have specific suggestions on the format, but there is no question that action is needed in the immediate future. The downside of setting up a focus in NTIA that is later moved to a new entity [if one cannot be fashioned as an amendment to this legislation] is far outweighed by the need to have a federal focal point now. This entity should start immediately to gather and disseminate information and develop recommendations on the establishment of important Federal policy outlined later in this testimony.

There is also the important question as to whether the Federal Government should focus its attention on making the Federal workforce more efficient through telework and telecommuting or if it should undertake the task of education and promotion to the regions, states and the private sector.

Should the Federal role be as leader or as partner? We believe the Federal role should be as a partner in the implementation of Telework/Telecommuting/Telework Centers. Answers to the dimensions of this partnership may emerge from the DOT study referred to above.

The Federal Government's Flexiplace program, about which you have heard from others, is an example of an initiative by Executive Order in the spirit of "just do it." This important effort exemplifies the flexibility of programs that should be encouraged by executive and legislative action.

The Cooperative Administrative Support Unit [CASU] program of the President's Council on Management Improvement within the General Services Administration may provide a platform from which to launch successful Federal telecommuting programs.

There are already Federal telework and telecommuting initiatives as well as state, regional and private programs, Telecommuting Advisory Councils and other networks. There are private-sector professionals who have years of experience and comprehensive expertise in the application of telework and telecommuting. These resources should be important <u>partners</u> in any new Federal coordination and communication effort.

B. TELEWORK CENTERS -- THE PRIVATE PERSPECTIVE

Can Telecommuting from Telework Centers work?

We believe the evidence from the European Union, Scandinavia and the Pacific Rim supports the conclusion that Telework Centers that are integral parts of neighborhoods, villages and communities can work.

Telecommuting from a Telework Center is one application of [and a subset of] telecommuting. We have no data to document the number of U.S. telecommuters now using Telework Centers. It is thought to be in the low hundreds as opposed to the 6.6 million home-based telecommuters in the United States.

Will the private sector jump into telework centers in a big way in this or other United States New Urban Regions? Not likely in the near term for the reasons outlined in the SYNERGY/Management testimony.

What will the private sector do about telework centers? Interested parties will continue to explore the options to determine if there is a way to make it work. SYNERGY/Management and others suggest that a good place to start is with a sound business plan. We agree. [See material on this topic in Linda Risse's SYNERGY/Management Testimony to the Subcommittee page 8 and 9.]

C. FEDERAL TELEWORK CENTERS

Should the public sector create telework centers? Yes, but with caution.

The track record:

- The first significant telework center [Nykvarn Neighborhood Center in the Stockholm Region] closed after 5 years.
- The Totnes Business Exchange [Rural England] closed after 2 years.
- Washington State closed its center when support for a second year could not be located.
- The Hawaii State Center was opened with public- and private-sector telecommuters but was vacated by the private sector when they were expected to pay a portion of the operating costs.
- The newly open centers in California did not have committed users before they opened and international visitors have not given the centers high marks. [They were referred to by one visiting group as "empty offices by an expressway exit."]

With a track record like that, why should the Federal Government open Telework Centers?

There are several reasons:

The valuable lessons learned from the Nykvarn Center near Stockholm are being applied across Scandinavia and the European Union. The second generation applications are one of the bright spots in the economic and political perspective as the Scandinavian countries strive to remain competitive as their traditional niche between the Communist East and the Capitalist West disappears.

The Washington State Center would have required a very modest subsidy to stay open. The organizers might well have structured the center differently, and it might still be open if unanticipated State revenue shortfall had not derailed the original plans.

The planning and operation of a public telework center is a complex undertaking. We call your attention to the draft report "Puget Sound Telecommuting Demonstration Case Study: Washington State Telework Center" which we understand is appended to testimony submitted to the Subcommittee by Washington State.

What will make a public sector Telework Center viable? Beyond a Community and Regional context that makes a Telework Center an option -- location of employees, distance and time required to reach the traditional office location, etc. -- threshold guidelines for a public Telework Center should include:

- **Sound business plan**
- **Competent management team**
- **Commitments from agencies and entities whose employees will be served to pay for the services provided**
- **Optimum location in the neighborhood, in the village and in the community [See Initial Federal Telework Centers, below]**

The Hawaii State Telework Center has been widely reviewed. The cost of the center was nearly $20,000 per telecommuter to open and that is deemed by some to be too expensive. The private sector would not support such a cost. [See SYNERGY/Management Testimony to the Subcommittee Page 8 and 9.]

The Washington and Hawaii experience focuses attention on the most important point concerning public Telework Centers. There is a the fundamentally different calculus that applies to public, and especially Federal, Telework Centers than applies to private sector Telework Centers.

D. A FUNDAMENTALLY DIFFERENT CALCULUS FOR PUBLIC TELEWORK CENTERS

1. Public Responsibility for Mobility

If transportation and mobility are a public responsibility and if in our major urban regions it costs from $20,000 to $30,000 to create and maintain each new unit of transportation capacity for a 20-year period -- that is, creating the space for one new worker to get to work for 20 years -- then avoiding this cost by providing an alternative like telecommuting may save public resources in the long run, even if the "cost" is considerable.

In the Virginia Subregion of the Baltimore/Washington Region, the cost is $26,000 per new unit of system capacity. That is why the Commonwealth of Virginia is setting aside "transportation" money to support programs to reduce demand in addition to the traditional construction and equipment programs to add capacity. Telecommuting Programs qualify for public expenditure to reduce demand just as we spend public funds to increase capacity.

This prospective should not, however, be seen as a blank check to justify any demand reduction idea. Application of the credit for transportation demand reduction from a Telework Center should only be applied after careful regional analysis and when there are is substantial traffic reduction and thus significant savings. In a Region with over 4,000,000 workers, removing 200 commuters from the Region's road system is not "significant." In a closed system like the Island of Oahu, it is far easier to document and justify these savings than in a Regional system such as the Baltimore/Washington Region.

2. Public Responsibility for a Sustainable Environment, A Prosperous Economy and a Stable Society.

If it is a public responsibility to provide a sustainable environment for the citizens, what role should the substitution of telecommunications for transportation play? What are the cost tradeoffs? The same calculus applies to a sustainable environment, a prosperous economy and a stable society as does to the provision of mobility.

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3. Regional Pattern and Density of land Use

Fundamental to the provision of mobility and a sustainable environment, a prosperous economy and a stable society is an improved pattern and density of land use at the community, subregional and regional levels.

The Federal government plays a major role in shaping the Baltimore/Washington Region's pattern and density of land use. Actions of the Federal government are a primary factor contributing to the implosion of population to our New Urban Region [from across the country and around the world] and the explosion in the dimension of the Region across five states.

At some point the Federal government must begin to coordinate its decisions with respect to its workforce in a way that optimizes the Region's pattern and density of land use. A Federal work force distribution program can improve regional pattern of density of land use.

Recent plans [now on hold] concerning the CIA consolidation and the proposed Navy office complex exemplify the worst and best possibilities of such a federal strategy.

Telework Centers could be part of the long- and short-term Regional strategy with respect to pattern and density of land use. [The impact of telework on the pattern and density of land use are being explored by SYNERGY/Planning, Inc. in work to be presented to the Transportation Research Board Conference in January of 1993.]

4. The Fundamental Change in The Public Employment Structure Yet to Come

Public sector has not yet fundamentally reexamined its workforce structure as the private sector has been doing for 20 years.

In the private sector the move of non-manufacturing employment to lower density sectors of our urban regions and the shift of work to "back offices" that have together created "Edge Cities" has been going on since before Toffler published Future Shock in 1970, much less The Third Wave in 1980.

The wide-spread use of back offices by banks and financial organizations has been proceeding for over 20 years. Since mid-1989, hundreds of thousand of jobs have been eliminated by **profitable** companies to make themselves more competitive. To a great extent this movement **proceeded** the current economic downturn. As noted above, SYNERGY/Planning has identified a significant acceleration of this trend in the past 36 months. The current bank consolidations are in many cases **propelled** by

[and the costs partially paid for by] the savings from new work forms.

In California -- where public entities have been prompted by Proposition 13 and Regulation XV -- and in a few agencies and municipalities has the public sector began to looked at improving workforce productively and effectiveness.

The Office of Technology Assessment, The General Accounting Office and other agencies have begun to consider the new demographic profile of the workforce and new ways of doing work, but the revolution is still to come When the Federal government does implement fundamental change in the way public work is done, the experience gained in Telework Centers will be invaluable.

E. **INITIAL FEDERAL TELEWORK CENTERS**

The direct beneficiaries of the initial Federal Telework Centers must be more than to those who choose to live far from work or have moved to communities in previously rural regions seeking rural values but want to be subsidized to keep an urban job.

Some workers have moved to these relatively remote communities at the edge of the Real Urban Region to find affordable housing. Our governance structure must find more cost effective and comprehensive ways to address affordable housing than to subsidize a long distance commute.

Communities where these Federal workers now live are thought to be at the "fringe" of, or "outside," the urban region. The fact that there are Federal workers who hold jobs in traditional federal offices demonstrates that the communities in which they now live are part of the Real Urban Region. These communities are socially, economically and physically part of the Real Urban Regions in which 95% of all Americans live, work, and seek services and amenities.

[SYNERGY/Planning defines:

"Community" as one of the organic components of which our real urban regions are composed --region/subregion/community/village/ neighborhood/cluster/dooryard/unit -- and the <u>smallest</u> organic component that can achieve a jobs/housing/services/amenity balance.

"Region" is the smallest organic unit of urban form where sustainability is possible. Neither balance nor sustainability suggest self-sufficiency which cannot be completely achieved, even at the national level in our global economy.

To be viable, telework centers must be in a community, not an outpost along an expressway where one must drive to get to work and drive to services needed during and after work.

Telework Centers must be in viable communities with the potential for jobs/housing/services/amenity balance. Telework Centers should be seen as a way to add jobs or reduce total public cost of providing for persons who have jobs. Telework Centers will not alone save a community from economic, social or physical decline. Telework Centers can be part of the solution.

The "Community's" Telework Center may be located in one of the villages that make up the community, perhaps in a village center or in a neighborhood center of one of the neighborhoods that make up the village.

Telework Centers in the neighborhood/village/community context would support home telecommuters with conference space, teleconference facilities, shared special equipment, and other services.

Under these locational and programmatic circumstances, a Telework Center would contribute to rational patterns and densities of land use. It should be noted that in this context a Telework Center is similar to the application in the European Community and Scandinavia.

Do Easton, Hagerstown, St. Marys and Winchester sound like good candidates? Yes. So do Frederick, Fredericksburg, Martinsburg, Warrenton, Cambridge and others. The location choice should depend on a rational evaluation of the alternatives. We understand a site evaluation process is underway.

F. TELECOMMUNICATIONS INFRASTRUCTURE

Some of our friends say that new and more sophisticated telecommunications infrastructure would enhance and speed the beneficial application of telework and telecommuting. [They suggest we are running our Lamborghini on a dirt road -- no mention of "Buy American."]

Some of our friends say that there is off the shelf and through a simple copper pair as much capacity as any known teleworker or telecommuter needs.

We always agree with our friends.

The growth of Telecommuting and the growth of the telecommunications infrastructure are parallel and interrelated but not interdependent events in the contemporary "First" World.

They are both important factors in the way the future works, but one does not rely or depend on the other.

Telecommunication infrastructure, while of critical importance, is the easiest and cheapest infrastructure to place in the urban region. That is one of the advantages of Telework and Telecommuting.

As our colleague John Niles of Global Telematics points out, compared to roads, railroads, subways, bridges, tunnels, airports and canals, compared to schools and fire stations or compared to water, sewer and storm drainage systems ... telecommunication systems are very cheap and simple. Consider the speed and ease of putting in the telecommunications network necessary for the Gulf War, a network broadcast football game or a Presidential appearance.

Much more important than the infrastructure issue is the critical issue of the pattern and density of land use dealt with in the previous section.

VII. SUMMARY/RECOMMENDATIONS

SYNERGY/Planning, Inc. supports the passage of H.R. 5082 and offer suggestions for refinement of H.R. 5082 and guidance for the implementation of Federal Telework/Telecommuting/Telework Center policy contained in this testimony:

- Federal Telework/Telecommuting research, information exchange and development of policy recommendations should be made the responsibility of a permanent interagency task force. [Page 7.]
- Any new Federal initiative in Telework/Telecommuting should be a partner in the ongoing efforts with respect to these issues. [Page 7.]
- Federal entry into Telework Center development should be carried out with caution. [Page 8.]
- There are fundamental public policy objectives that Telework/Telecommuting/Telework Centers can support. These include regional mobility, a sustainable environment, a prosperous economy and a stable society. [Page 10.]
- The most important contribution that Telework Centers can make is to help rationalize the pattern and density of land use at the Regional, Subregional, Community, Village and Neighborhood level. [Page 11.]

- Experience gained in the operation of well-conceived and well-managed Telework Centers can contribute to the fundamental restructuring that will be required in the Federal workforce. [Page 12.]

- SYNERGY/Planning, Inc. recommends several specific parameters for successful implementation of Telework Centers: [Pages 9 and 12.]

  - Sound business plan

  - Competent management team

  - Commitments from agencies and entities whose employees will be served to pay for the services provided

  - Optimum location in the Region, Subregion, and especially in the Community, in the Village and in the Neighborhood.

We appreciate the opportunity to present our views and we will be happy to answer any questions you may have.

TELEWORK\MARKTEST.003

ATTACHMENT ONE
Page One

SYNERGY
Planning

EM Risse
Principal

COMPETITIVE STRATEGIES FOR THE '90S

There is a growing realization we must make better use of our land resources if we are to have a sustainable civilization with a prosperous economy, a healthy environment, and amenable neighborhoods, communities, regions and nation.

SCOPE OF SYNERGY SERVICES

SYNERGY/Planning facilitates change in public and private institutions to create optimum land-use patterns and densities to achieve improved transportation service, affordable housing, and competitive businesses. Optimum patterns and densities of land use provide accessible open space, improve water and air quality, and lower the cost of government services at the multi-state, regional, subregional, community and neighborhood levels.

SYNERGY/Planning works with public- and private-sector clients to achieve improved patterns and densities of land use by:

- Determining the optimum use for land resources
- Implementing transportation and other infrastructure improvements
- Developing and implementing strategies to achieve specific goals through consensus building among diverse groups
- Creating the institutional context needed to achieve optimum land-use patterns and densities

Transportation infrastructure determines, and is determined by, the pattern and density of land use. SYNERGY/Planning has played a key role in evaluating, planning, and implementing transportation alternatives ranging from magnetic levitation, new METRO facilities, commuter rail and highway corridor studies, telework/non-traditional workplaces, and regional transportation systems.

Economic competitiveness depends upon land-use patterns and density which directly impact capital formation, work-force productivity, and thus competitiveness in regional, national and international markets. SYNERGY/Planning has assisted in changing patterns and densities of land use to enhance livability, alleviate congestion, and optimize the conservation of resources. Rational patterns and densities are the only way to achieve environmental enhancement with prosperity.

SYNERGY/Planning and SYNERGY/Management collaborate in the provision of services in support of non-traditional workplaces and telework, moving work to people rather than people to work.

SYNERGY/Planning and SYNERGY/Photography collaborate in the production of information and educational photographically-illustrated presentations for public- and private-sector clients. Topics range from natural-area preservation and optimum land-use patterns and densities to transportation system design.

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SELECTED EXPERIENCE AND EDUCATION

The Principal of SYNERGY/Planning, E M Risse, has extensive experience in creating plans and converting them to reality. During the past 22 years, Mr. Risse has specialized in the planning and construction of new communities and large scale, mixed-use and multi-use developments. He has designed, planned and managed the provision of professional services for 36 major projects in 13 states. These projects are designed to provide homes, employment, services, and open space for over 500,000 people on over 125,000 acres.

Communities and neighborhoods in the Washington/Baltimore region which Mr. Risse has planned are now home to over 50,000 residents and contain over 10 million square feet of commercial enterprise. In the past 15 years, he has concentrated his efforts in the northern part of Virginia. Among others, he planned Fair Lakes, a multi-use neighborhood on 640 acres. Fair Lakes provides an environmentally-sound setting for up to 40 office, retail, and service facilities employing over 20,000 workers and for 1,400 dwelling units. Fair Lakes is a neighborhood within Fairfax Center, a 5,400-acre community he also helped plan.

Mr. Risse is the architect of large-scale land-use control systems. The best known covers the 6-million acre Adirondack Region in New York State. This three-tier planning and land-use structure is based on the principle that the level of control should be at the level of impact. He is also involved in conservation efforts in the Caribbean and is an advocate of adaptive reuse to preserve historic and cultural resources and conservation of the natural environment.

The Principal has planned, designed, supervised the implementation of, as well as written about, photographed and lectured on, desirable patterns of development ranging in scale from regions and free-standing new towns to small mixed-use neighborhoods and dooryards. Additionally, Mr. Risse lived in and participated in the governance of Columbia, Maryland (8 years) and Reston, Virginia (8 years). From 1975 to 1981, he was responsible for the governance of Burke Centre, Virginia, a 20,000-resident community he designed. He and his wife/business partner now live, work, and participate in the governance of Fair Lakes, Virginia.

In addition to his private practice and co-sponsorship of the not-for-profit Friends of Virginia's Future Program, Mr. Risse teaches planning at the graduate level in the University of Virginia's Northern Virginia Program. He has taught in the George Mason University Law School and was Associate Professor at Rensselaer Polytechnic Institute, School of Architecture.

His academic background includes forestry, physics, architecture, philosophy, mathematics, law, and urban and regional planning. He holds a JD/LLB from the University of California (Berkeley).

Mr. Risse is Co-Sponsor/Facilitator of the Friends of Virginia's Future Program, is a member of the Board of Directors of the Northern Virginia Transportation Alliance and chairs its Technical Committee, and is the Convener of the Public-Private Task Force on Commuter Rail and the I-66 Task Force. He is a member of the Governor's Virginia Telework/Telecommuting Advisory Task Force, the Citizens Advisory Committee of the Northern Virginia Regional Transportation Plan, the Secretary of Transportation's Transportation Efficiency Fund Advisory Committee, and the American Planning Association/American Institute of Certified Planners.

1991

29 July 1992

TESTIMONY SUBMITTED BY LINDA T. RISSE
CO-PRINCIPAL OF SYNERGY/PLANNING, INC.

TO THE SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE ON H.R. 5082, THE TELECOMMUTING ACT OF 1992.

SYNERGY
Management

Linda T. Risse
Principal

I. OPENING

Representative Markey, Members of the Subcommittee, Interested Parties;

I, Linda Risse, am Co-Principal of SYNERGY/Planning, Inc., responsible for the SYNERGY/Management Division and am a resident of the Baltimore/Washington Region. **[Also see III. BACKGROUND]**

Congressman McMillen and his staff are to be commended for their support of telework and telecommuting.

II. INTRODUCTION

In your request that I submit testimony, you asked that I address "How Corporations Have Used Telecommuting." Therefore, my testimony focuses on the private-sector approach to telework and telecommuting.

In order to address this topic, I will first provide a FRAMEWORK **[See IV.]** which includes:

- Definitions of Telework, Telecommuting, and Non-Traditional Workplaces [Including Telework Centers]
- Changes in the Way Work Is Done/Emergence of Telecommuting
- Data on Growth of Telecommuters and Homeworkers
- Public Health, Safety and Welfare Benefits **EXHIBIT ONE**
- Employees Benefits (Public and Private) **EXHIBIT TWO**
- Employer Benefits (Public and Private) **EXHIBIT THREE**
- Telecommuting, a Cultural Issue
- Caution Concerning Telework/Telecommuting Implementation

I will then discuss HOW CORPORATIONS HAVE USED (AND ARE USING) TELECOMMUTING. **[See V.]**

- Why Companies Implement Programs
- Examples of How Telework and Telecommuting Are Used
- Productivity in Corporate Programs
- Business Approach to Non-Traditional Workplaces - Home Offices, Satellite and Neighborhood Centers

I will conclude with **VI.** SUMMARY and **VII.** RECOMMENDATION.

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III. BACKGROUND

SYNERGY/Planning, Inc. has two Divisions - SYNERGY/Management and SYNERGY/Planning - which provide telework and telecommuting services to clients.

My Division, SYNERGY/Management, assists clients to become more competitive by implementing telecommuting programs, non-traditional workplaces and other management strategies to lower overhead and increase productivity and effectiveness.

E M Risse, responsible for the SYNERGY/Planning Division, has been requested by the Subcommittee to testify on H.R. 5082. The focus of the SYNERGY/Planning Division in telework and telecommuting is the land-use pattern and density/transportation relationship; specifically, the effect of substituting telecommunications for transportation on the pattern and density of land use.

We both serve on the Governor's Telework and Telecommuting Advisory Task Force in Virginia, are active members of the European Communities Telework Forum Network and were participants in the USDOT national pre-study forum convened to discuss what should be included in the USDOT Telecommuting Study. I am on the Board of the Potomac Chapter [Mid-Atlantic] Telecommuting Advisory Council.

I have discussed telework and telecommuting on television and radio and have lectured on these topics for the University of Virginia's Graduate Planning Program and the Department of Continuing Education as well as have made many presentations to private- and public-sector audiences. I have participated in an audio tape information service for state governments and have written articles on these subjects.

Prior to joining SYNERGY/Planning, Inc. as Co-Principal, I was the Director of Personnel and Administration for Intelligent Electronics, Inc.

IV. FRAMEWORK

Definitions

Telework is moving work to people rather than moving people to work.

Telecommuting is replacing the trip from a home to a traditional workplace with electronic communications some or all of the time. Telecommuting is a subset of telework. **Telecommuters** are employees of the organization from which they are telecommuting.

Non-Traditional Workplaces The most widely used non-traditional workplace for telecommuters is the home office. Other non-traditional workplace options, "telework centers," are satellite and neighborhood centers.

Satellite Centers are workplaces used by employees assigned to different departments, divisions or agencies within a single organization, all of whom live near the center.

Neighborhood Centers are workplaces which accommodate employees from a number of different organizations, all of whom live near the center. Neighborhood Centers can have employees from several levels of government, i.e, federal, state, local, and from private-sector organizations.

The Neighborhood Center concept has been applied most effectively in Scandinavia and Japan. One primary reason is that, in these parts of the world, homes are much smaller than in the United States and therefore less suitable for working at home.

Satellite Centers for Federal workers are the focus of H.R. 5082 and of today's Subcommittee Hearing. H.R. 5082 would authorize non-federal public employees to use the site if contribution requirements are met - thus creating a **Neighborhood Center**. H.R. 5082 would also permit the creation of **Neighborhood Centers** with private participation if there is "excess capacity" and all other requirements are met.

Changes in the Way Work Is Done/Emergence of Telecommuting

Specialization and markets first emerged as patterns of work in the neolithic agriculture and trading communities in 4000 BC. Through the Classic Civilizations, the Middle Ages and the Reraissance, work was done at or close to the home of the worker.

The second significant change was the Industrial Revolution starting in the Mid-18th Century. Telework is only the third fundamental shift in the way work is done.

The concept of telecommuting was introduced about 1970, and by 1984, 200 U.S. companies were experimenting with telecommuting in some form. During the 1984 Olympics in Los Angeles, telecommuting received national attention by the general public.

Data on Growth of Telecommuters and Home Workers

June 1992 data from Link Resources, a New York-based research firm, states there are currently 6.6 million telecommuters in the United States. Numbers from Link include only company employees working at home during normal business hours.

Link reports that is a 20 percent increase in telecommuters up from 5.5 million in 1991. Link's forecast calls for telecommuters to increase to over 11 million by 1995.

According to 1992 Link data:
- o 77% of telecommuters are white-collar workers
- o 19% of telecommuters work at home 35 or more hours per week
- o 18.3 hours/week is the average number of hours worked at home Monday-Friday including evenings
- o 81% of telecommuters are from businesses with under 100 employees

Data from Link released in June 1991 on "homeworkers" reported 38.4 million individuals are working from their homes. Link's 1991 forecast for number of "homeworkers" by 1995 is 51.3 million.

These 1991 numbers include:
- o 11.8 million primary self-employed home workers
- o 10.5 million part-time self-employed home workers
- o 5.5 million telecommuters
- o 10.6 million high-tech corporate after hours homeworkers

Telecommuting, a Cultural Issue

The growth of telecommuting is primarily an organization culture and perception issue rather than a technology issue.

Potential Benefits of Telework and Telecommuting

Telework and Telecommuting have the potential to provide significant public welfare benefits.

SEE PUBLIC HEALTH, SAFETY AND WELFARE BENEFITS - EXHIBIT ONE

There are many possible benefits to employees and employers which can result from formal and informal telecommuting programs. Telecommuting is often referred to as a win-win situation.

SEE EMPLOYEE BENEFITS - EXHIBIT TWO

SEE EMPLOYER BENEFITS - EXHIBIT THREE

When the employee and employer benefits are added to the public welfare benefits, they create a compelling rationale for expansion of the application of telecommuting.

In addition, there will be other catalysts to the growth of telecommuting. The Americans with Disabilities Act [ADA] of 1990, the Clean Air Act Amendments [CAAA] of 1990, and the Intermodal Surface Transportation Efficiency Act [ISTEA] of 1991 will necessitate action on the part of some corporations,

agencies, and institutions to comply with their respective mandates. Telework and telecommuting can be used to assist in complying with each of these acts.

Caution Concerning Telework/Telecommuting Implementation

There are some who focus on the "problems" [I call them **concerns.**] of telecommuting. The issues which include loneliness on the part of the telecommuter, data security, union apprehension, liability and others most often associated with the possible downside of telecommuting are solvable. There are workable resolutions to these concerns as attested to by the successful programs.

To interject a note of caution, however, each solution is a solution only in the context of the individual culture of the employer and of the employee and supervisor. There is no across-the-board solution to a problem that works for all companies any more than there is training module for telecommuters that is suitable for all companies. Each program needs to be tailored to the company culture.

Our biggest concern, of which we have seen first-hand evidence, is that some organizations may start telecommuting programs without having properly addressed the issues or done the necessary preparation, and, as a result, their program may be a limited success or may fail. The costs [in time, monetary, and morale] to "fix" a program that has been improperly implemented are much greater than to "do it right" the first time.

And second, if proper land-use pattern and density incentives, programs, controls and education are not put in place to encourage individuals to live in communities, we can foresee telecommuters contributing to "super sprawl" because their jobs will give them more flexibility about where they live. [See E M Risse, SYNERGY/Planning, Testimony to the Subcommittee on H.R. 5082 on pattern and density of land use.]

V. HOW PRIVATE CORPORATIONS ARE USING TELECOMMUTING

Which Companies Implement Programs

Most businesses with programs are implementing them along with other rightsizing applications as part of their strategic and tactical planning to lower overhead and increase productivity and effectiveness. Telecommuting programs are very often started after a business has downsized. Businesses do not publicize these programs. They have much to lose if their competitors become aware of what they are doing to increase their competitiveness.

It bears repeating that Link reports 81 percent of the 6.6 million telecommuters come from companies with under 100 employees. Executives operating small businesses are very often open to doing whatever is necessary to make themselves as competitive as possible, and their size and structure allows them to make decisions and move quickly.

Our small business clients include entrepreneurial corporations, national and international, who are using innovative approaches enhanced by technology to increase their competitiveness and prosper in a difficult market.

There are some businesses and organizations that are anxious to publicize their successful telecommuting programs. This is very often due to either:

- o They market products and services to the telecommuting community.
- o They employ a large number of hourly workers in information-support positions.

The telephone companies are an example of having a product/service to sell to companies with telecommuters, and if telephone companies are going to sell others on the concept, they need to have their own successful programs.

An example of the second bullet is insurance companies and government agencies who sometimes do not pay their non-exempt workers as much as some other businesses do and therefore need to look for other ways to attract and retain workers. Also, if an organization uses a large number of these workers, facility overhead can be quite high.

Additionally, large companies in parts of California and Washington State are implementing telecommuting programs to comply with clean air and traffic mitigation requirements.

Examples of How Telework and Telecommuting Are Used

Many jobs or parts of jobs can be performed as easily in a home [non-traditional] office as in a main [traditional] office. For example, over 60 percent of the jobs in the Baltimore/Washington Region are suitable for some form of telecommuting.

The types of tasks which corporations have telecommuters performing include but are not limited to reading, writing, analysis, problem solving, designing, computer programming, data entry, word processing, and talking on the telephone. SYNERGY/Management has sorted jobs suitable for telecommuting into six generic categories.

In addition to using formal telecommuting programs to achieve strategic and tactical planning objectives as discussed above, the private sector also uses telecommuting less formally.

For example, companies sometimes use telecommuting to assist valuable employees in continuing to work during a short-term leave of absence such as maternity leave, recovering from an accident or surgery, or caring for a family member. Also, in the case of a parent who makes a decision to stay home with her/his children...if the employee has a hard-to-find skill, valuable experience, or is the primary liaison of a large client, arrangements may be set up to allow her/him to work at home.

Another situation where telecommuting can be used is in the event an employee's spouse is transferred and therefore the family relocates. If the employee that must leave her/his job because of the relocation has the suitable attributes, job, and circumstances, it may be possible for the employee to keep her/his job by telecommuting. The above examples represent benefits to both the employee and employer.

The telecommuting possibilities for businesses to use in assisting disabled workers and in complying with the July 26 deadline for the second phase of the Americans with Disabilities Act will also create many opportunities.

In addition to home-based telecommuting, telework and telecommuting are used to provide a whole new way of establishing an economic base in rural areas by providing a way to funnel work into areas of high unemployment. [See John Niles, Global Telematics, Testimony to the Subcommittee on H.R. 5082 regarding his insights on providing for the economically and spacially disadvantaged.]

Telework makes possible substantial back offices for uses such as customer support, telephone operator, reservation and catalogue centers. Some banks, telephone and insurance companies and others are locating their key support functions in "low rent/low wage" areas including international locations.

Productivity in Private Sector Programs

It has been reported that the productivity of some employees who have started telecommuting has increased from 20 to 40 percent. We believe this is certainly possible. However, productivity is not an all encompassing goal. Our clients are equally interested in encouraging entrepreneurial thinking, improving effectiveness and providing a quality result. While developing measures for the quantity of work produced can very often result in an increase in output, it does little to encourage improving the effectiveness of the task or the quality of the product. There needs to be a balance.

We know that individuals usually become more productive when telecommuting. However, there are many different reasons for this in addition to fewer interruptions which is most often cited. Others include the quality of program preparation, selection process, training and management. Sometimes when a telecommuter begins telecommuting, there is an adjustment period when productivity [effectiveness] drops. Whether there is a drop, how big it is, or how long it lasts usually is directly dependent on quality issues as previously discussed.

Private Sector Business Approach to Satellite and Neighborhood Telework Centers

From the research and experience we and our colleagues have with satellite and neighborhood centers "telework centers," it is clear they will not be sustained without a continual subsidy or a new approach. Centers opened to date have not had a successful track record.

The place to start includes a creative, sound business plan, the correct set of physical circumstances, and a project management team with the right skills and experience to oversee the process.

Before the private sector will embrace telework centers, the total savings in facility and other expenses at the main [traditional] office must more than offset the total telework center expenses, e.g., a net reduction in total overhead expenses. Income generated by subleasing excess space or in other ways adding value and creatively reducing expenses is also included when calculating total savings. The same considerations apply if either building is owned by the private entity. This takes very careful analysis and planning which are not required to the same degree when employees work from their homes.

Our private-sector clients look for ways to reduce overhead. Many companies have excess space in buildings they are presently occupying [due to their taking excess space in the 80s because they anticipated growth which did not happen, or because they have downsized by laying people off or by instituting a hiring freeze], and they have little or no interest in leasing space in another building to set up a satellite center.

This is especially not the case when they can set workers up to work in home offices [no facility overhead] or existing branch offices they are already operating for other aspects of their business.

Some managers are apprehensive about managing telecommuters working from home and are more comfortable about managing employees working in telework centers; however, they can be given training in "results-oriented management" and managing from a distance. Comprehensive training is much less expensive than setting up a physical facility to offset a management concern.

When their leases come up for renewal, corporations are exploring cost-savings alternatives. A creative mix of space which might include new main and/or branch [traditional offices] combined with [non-traditional] home-offices and/or telework centers would present an attractive option.

However, with the vacancy rate of commercial office space in the Washington Subregion ranging from 15 to 20 percent, there are very good deals available in prime and secondary space for the companies that are looking at alternative space. The circumstances are similar in most other regions.

From a purely "reduction in overhead" perspective, telecommuters working from home offices is still the most attractive option. Also, for those looking at ways to comply with the Americans with Disabilities Act and Clean Air Act Amendment regulations, working from a home office is the easiest telecommuting alternative to implement.

Private-sector telework centers, to this point, have not caught on in this region although we are now seeing greater interest. Reports from outside the Baltimore/Washington Region suggest the story is much the same.

We are contacted occasionally by private-sector entrepreneurs that are exploring the possibility of opening a neighborhood center. We would not be surprised to see someone making the commitment to pioneer such an effort in the not too distant future.

[See E M Risse, SYNERGY/Planning, Testimony to the Subcommittee on H.R. 5082 regarding the fundamentally different calculus applicable to public-sector telework centers.]

VI. SUMMARY

Private sector businesses look at ways to enhance their competitiveness by implementing business strategies that cultivate a more entrepreneurial workforce and work techniques, decrease overhead, and increase productivity, efficiency and effectiveness. Telecommuting programs are being implemented to achieve these objectives.

We believe that organizations will increasingly have fewer employees and less traditional work space and will expand their use of outside services such as those of independent contractors. They will implement more results-oriented management practices like telecommuting and other flexible work programs as well as more resource-sharing strategies. And they will form more tactical partnerships and strategic alliances.

VII. RECOMMENDATION

SYNERGY/Planning, Inc. supports the passage of H.R. 5082 and offers the following suggestions for refinement of H.R. 5082 and guidance for the implementation of Federal Telework/ Telecommuting/Telework Center policy:

- Federal Telework/Telecommuting research, information exchange and development of policy recommendations should be made the responsibility of a permanent interagency task force.
- Any new Federal initiative in Telework/Telecommuting should be a partner in the ongoing efforts with respect to these issues.
- Federal entry into Telework Center development should be carried out with caution.
- There are fundamental public policy objectives that Telework/Telecommuting/Telework Centers can support. These include regional mobility, a sustainable environment, a prosperous economy and a stable society.
- The most important contribution that Telework Centers can make is to help rationalize the pattern and density of land use at the Regional, Subregional, Community, Village and Neighborhood levels.
- Experience gained in the operation of well-conceived and well-managed Telework Centers can contribute to the fundamental restructuring that will be required in the Federal workforce.
- SYNERGY/Planning, Inc. recommends several specific parameters for successful implementation of Telework Centers:
  - Sound business plan
  - Competent management team
  - Commitments from agencies and entities whose employees will be served to pay for services provided
  - Optimum location in the Region, Subregion, Community, Village and Neighborhood.

Thank you.

EXHIBIT ONE

SYNERGY
Management

Linda T. Risse
Principal

NON-TRADITIONAL WORKPLACE STRATEGIES

Public Health, Safety, and Welfare Benefits

National Benefits

- Increase productivity of work force
- Decrease consumption of non-renewable resources
- Create viable national economy
- Improve foreign trade balance
- Facilitate employment opportunities for the disabled
- Improve traffic flow on highways of national significance
- Reduce traffic fatalities

Regional Benefits

- Increase competitiveness of regional economy
- Help offset regional infrastructure and service deficiencies (affordable housing, transportation, and educational services)
- Lower total miles traveled in low occupancy vehicles
- Lower number of single occupant automobile trips
- Lower congestion on inter- and intra-regional routes
- Improve regional air quality
- Provide incentive for more efficient pattern and density of land use

Community Benefits

- Lower number of trips on community streets
- Improve support for community services -- public (libraries and schools) and private (retail)
- Provide employment opportunities for community members unable to leave community
- Reduce number of unattended children before and after school

Neighborhood Benefits

- Enhance day-time security of neighborhoods
- Improve safety on streets, sidewalks, pathways, and dooryards
- Improve support for neighborhood facilities and services
- Provide alternative for institutionalization of neighborhood disabled and elderly

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EXHIBIT TWO

SYNERGY
Management

Linda T. Risse
Principal

NON-TRADITIONAL WORKPLACE STRATEGIES

Employee Benefits

Personal/Self Benefits

- Improve quality of life
- Evaluation based on performance, not on appearance
- Increase flexibility and autonomy
- Closer bonds to family
- Increase pleasure and utility derived from individual's/family's most expensive asset (home)
- Less stress due to aggravation of commuting
- May be only means of working at all or of keeping a particular job

Time

- Avoid the disruptions of inclement weather
- Increase in useful time due to decrease (or elimination) of time taken up by commuting

Monetary

- Higher net pay from the same gross pay due to fewer expenses:
  - Decrease in lunch/food costs
  - Decrease in clothing costs
  - Decrease in daily transportation expenses
  - Decrease in wear and tear on car
  - Decrease in child-care or parent-care costs if applicable
  - Decrease in commute time results in increased remuneration for hours devoted to work-related activity
- May be able to deduct a percentage of home-based workplace-related expenditures (i.e., real estate taxes, mortgage interest, rent, utilities, insurance, depreciation, and related costs) if IRS requirements are met

Neighborhood/Community

- Closer bond to neighborhood/community
- Increase safety and security in residential neighborhood/community

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EXHIBIT THREE

SYNERGY
Management

Linda T. Risse
Principal

NON-TRADITIONAL WORKPLACE STRATEGIES

Employer Benefits

Productivity

- Establish result-oriented management techniques
- Compensation based on productivity rather than presence
- Improve structure of communications
- Increase efficiency and employee productivity
- Establish disaster contingency work-through program for company

Human Resources

- Less turnover
- Alternative work production using independent contractors
- Retain best, most-experienced employees
- Improve employee morale
- Reduce employee stress
- Telecommuting viewed by employees as a benefit
- Improve quality of life for employee

Cost Effective

- Lower labor costs
- Reduce parking costs
- Less office space needed and more effective use of office space
- Less absenteeism/sick leave
- Avoid absentee impact of inclement weather
- Less after hours/weekend heating, lighting, and air-conditioning costs
- Fewer expenses during transition periods -- downsizing or expansion
- Better use of costly computer/hardware resources
- Cut recruiting and training costs

Public Welfare

- Compliance with hire-the-disabled regulations
- Compliance with air-quality regulations
- Compliance with traffic-mitigation regulations
- Public relations value

Competitive Advantages in a Tight Labor Market

- Competitive advantage in hiring
- Access to new labor markets (broader market)

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Mr. McMILLEN. I appreciate all the testimony and we will move now to questions. John, as you heard, Mr. Oliver from NTIA believes that we still have to build the roads before telecommuting can become a reality. I think that you contradicted that. You believe the technology is in place. Maybe you could comment on that as well as Mr. Grantham, Mr. Risse.

Mr. DILLON. Mr. Chairman, you know, I think you have to start with defining what the requirements are for someone who is telecommuting. In many instances those requirements are not very sophisticated for them to telecommute out there so therefore they don't need all those highways that you are talking about and there are millions of people out there that are ready to telecommute and they don't need anything more.

Even those that want to telecommute that have sophisticated needs, we have the technology that is in place out there to serve those needs. Let's take your tele-work center, for instance. If you wanted to put a tele-work center on the Eastern Shore, I believe that there is an assumption on some people's part that there is no fiber optic on Eastern Shore because it is a rural or semi-rural area. That is not true.

We have fiber optic deployed all over the State. We are not to every House, every curb, that kind of situation, but we are between our main switching offices down there. If we worked in conjunction with the Federal Government in picking out a site where a telework center would be, it would not be very difficult to deploy the proper amount of technology to the work center that would give them the highways that they need for the most sophisticated of technology.

Mr. McMILLEN. Just elaborate on that. Talk about the Eastern Shore and the nine counties. If one of them won the competition to build this under Congressman Hoyer's legislation, would you be able to within next year's fiscal time line, be able to put the fiber to it?

Mr. DILLON. Absolutely.

Mr. McMILLEN. Absolutely.

Mr. DILLON. We would like to work in conjunction with the selection of the site, but we would work in partnership with you and I am confident to say that we would be able to provide the technology you need for that.

Mr. McMILLEN. And it wouldn't be too far a jump for fiber optic to be established in Hagerstown if the government really wanted it?

Ms. FULLER. It is in Hagerstown.

Mr. McMILLEN. Do you have the two-way video capabilities in place at this point in time?

Ms. FULLER. We don't have it in place. We don't have a site open.

Mr. McMILLEN. I mean will you have a—I should rephrase the question. Will you have it in place?

Ms. FULLER. It would probably depend on whether we had adequate funding.

Mr. McMILLEN. You had what?

Ms. FULLER. Adequate funding.

Mr. McMILLEN. That is the question I asked Ms. Bawden, if they needed some additional money to get the—you know, the real ulti-

mate center, which is the two-way video which gives you the capability of literally being there but not being there. Maybe Dr. Grantham and Mr. Risse, you could comment on that grant.

Mr. GRANTHAM. I would offer a couple comments about the technology. In some of the studies that we have done we have actually found that the people who are telecommuting report to us that the technology they have access to in their homes is better than the technology they have access to in the workplace.

In fact, what they begin doing is taking the toughest work home because the computer, the modems, the telephone lines are more readily available. They don't have to sit around and wait to dial out or dial in. So that is kind of flipping it around, and we find that repeatedly.

Mr. RISSE. Well, I just comment that working with C&P here in the Washington metropolitan region from 1980 on, we have, because we saw this coming, in the communities that we developed and requested that they put in that kind of capacity and capacity for two or three lines per household, so you do, in fact, find that in this region you have capacity.

As our testimony stated, the implementation is a cultural and perception issue. Technology and telecommunications networks are not the limiting factor, but certainly better technology, as it comes on line, will help and will continue to speed this. But we have found no application.

We serve on the Governor's—Virginia Governor's telecommuting advisory task force. We have found no application in the Commonwealth of Virginia that C&P or the other local carriers cannot meet.

Mr. MCMILLEN. Let me ask you a crystal ball question for the State of Maryland because I am sure some of you, maybe with the exception of Dr. Grantham, have an understanding of the problems that our State faces in infrastructure, our budgets, clean air, the Clean Air Act, lost productivity, congestion on the highways. We are looking at billions and billions of dollars.

If we were really aggressive, I mean, $5 million is not aggressive, but if we were really aggressive in the establishment of not only Federal telecommuting centers but the establishment of private centers in conjunction with these, what could the ramifications for a State like Maryland, where so many people drive into Baltimore and Washington everyday and clog our highways and cause tremendous economic costs?

I mean, could we see numbers that—similar to what Arthur D. Little is saying, that 20 percent of the work force could actually telecommute?

Mr. DILLON. I think that Maryland is just a smaller version of what you see nationally. I think you could take those figures that Arthur D. Little has put in their study and you could apply those same kinds of percentages to Maryland and I think that the impact on the economy in the State of Maryland would be enormous.

Mr. MCMILLEN. This is one of those areas where business and the environment go hand in hand. Yes, Mr. Risse.

Mr. GRANTHAM. I would like to comment a little bit about that. In California we have environmental regulations requiring employers with more than 100 employees to develop plans to get their em-

ployees off the road. The average vehicle ridership has to go up. Failure to comply can cost a business up to $25,000 a day in noncompliance. Environment and business go hand in hand and we have seen that in Los Angeles, Sacramento and soon to be in the Bay area. It is a very serious issue.

Mr. RISSE. In further response to that, I think that work that Synergy Management has done and this collaborates with other work done nationally. About 60 percent of all the jobs that we do have some aspect of them that are amenable to telecommuting, to tele-work, and some of those obviously for telecommuting.

We don't at all disagree with the long term potential. We only suggest it needs to be done carefully and effectively, and that it could have a very significant impact on the pattern and density of the region and therefore the amount of commuting that is required.

Mr. MCMILLEN. On the Eastern Shore of Maryland, there are beautiful counties, Dorchester, Somerset, elsewhere. There are two impediments for those counties, really are jobs and training. People don't get sufficient training and the jobs aren't there. What telecommuting would do is all of a sudden you would have the jobs brought there, but the training needs to be very complementary to that. Most of those have—most of those areas have colleges, community colleges and regular colleges and—go ahead.

Mr. RISSE. That is absolutely right. The jobs that will be effective—can have the most effective training that way. But there is another way to think about those counties on the Eastern Shore and elsewhere. The reason that people have left those counties historically is that they have needed jobs. Those people are still interested in going back home and if you can provide them with a technology that allows them to take their work back to where they really would rather live, you have a synergistic effect of revitalizing the community by bringing some of those jobs back there.

Mr. MCMILLEN. And it is very true. You know, in the graduating class of some of the high schools down there, most of the kids go to college and never come back. They suffer tremendous brain drains and they go to where the jobs are, and it is just reverse of what we ought to be doing as a society is taking the jobs back to some of these places.

Ms. FULLER. If I can refer back to the Arthur D. Little study, we found by working with the President's council that in a 30 mile radius of Hagerstown, we had 5,000 to 6,000 Federal employees who are commuting everyday. If you multiply—if 84 of those people are driving 2.6 million miles per year, multiply that out of your 5,000 or 6,000 and you are talking about huge numbers which I think do not in any way underestimate the Little study. It is an enormous impact on the environment.

Mr. MCMILLEN. Go ahead, Dr. Grantham.

Mr. GRANTHAM. The thought about education, that being my business. One of the things that we are doing in California is combining the delivery of educational services with tele-work centers so you not only work there, you can go to school there and to the point of integrating that with child care so parents can go to work and child care is there and using the same technology base to put it altogether.

So the tools you use to learn at work are the same tools you use to learn. The University of Maryland has a State-wide system. It would require one training program for all the seven or six telecommuting centers. It would require one or two teachers and it would all be decimated through fiber optics.

Mr. McMILLEN. You wouldn't have to have a wheel created on every——

Mr. GRANTHAM. Exactly. I can be virtually present in six or seven classrooms at one time. It is frightening thought.

Mr. DILLON. We are currently having discussions with the State officials of higher education, Elmer Kalington mentioned a name up in western Maryland. What we are looking at is interactive distance learning, two-way video within the community college system all around Maryland. What an ideal situation to hook onto to do the training and kinds of things you are talking about in a telework center environment.

So those kinds of things are happening all over the place, including in Maryland.

Mr. McMILLEN. If we can get this legislation passed and get the funding, we should say, we will have these centers beginning to be built next year with additional funding. I mean, in September when the fiscal year begins in October, and it is remarkable to think that we could have these centers built as soon as next year, so it really is. And with that, I think the Federal Government has become the model for other—to encourage other States to do this.

I personally think, John, I don't know if you have had this conversation with the State of Maryland, but the State of Maryland ought to have an office of telecommuting. Like Virginia, Virginia has this kind of thing. NTIA should be connected to 50 States who have similar offices of telecommuting basically.

But as you have seen, we have had tremendous resistance from the administration to move this forward. I was going to ask Dr. Grantham a question about—we were talking about the commercial viability, about how do you make these things commercially viable, certain criteria and you were commenting upon that. If you would elaborate for a moment.

Mr. GRANTHAM. Without getting into the details of how much you need to lease office space per square foot. Marketing the business benefits to employers who would place teams into these centers to us is the key thing. We have been doing some work in the Silicone Valley with Hewlett Packard and Apple and folks like that who are able at this point to document the business benefit they receive in terms of lower cost of office space, dollars associated with lower turnover of key employees, not to mention the productivity increases, and what we find is being able to present that case is absolutely critical in making this concept work. You can't sell it on soft ideas. You need hard data.

Mr. McMILLEN. Mr. Risse, you were talking about some of the improvements, the fact that we should have—this office should be doing more R&D work than we have put in, or doing R&D, in fact, should be part of this bill. The other point that you—I think that is a very good point.

The other suggestion you made was that you weren't sure—you said the Federal Government should have a direct role in this,

which I think contradicted the previous panel's testimony and the second point you made is there should be a primary focus, however, you weren't sure that NTIA should be that primary focus.

Would you give me your thoughts on that for the record?

Mr. RISSE. Well, there is currently going on a study of—in the Department of Transportation looking at, this is the largest study that has been done within the Federal Government on tele-work, telecommuting and that study may well identify some—give us some guidance. We also say in our testimony in support of your legislation that establishing a place in the Federal Government now, right now, is more important than figuring out exactly where the best place should be, because every day that goes by, we lose time.

What we further suggest is that it might well be a responsibility for some sort of intergovernmental task force that would be a permanent task force that would represent Transportation and Technology Assessment and Office of Personnel Management, all of these places. HUD should be involved, Health and Human Services should be involved.

All these people should be involved, Energy should be involved.

Mr. MCMILLEN. The idea of having an office, you don't have a problem. But there should be a intergovernmental connection there, and I think Congressman Hoyer worded—referred to that when he said GSA and OPM have expertise.

Maybe what we need to do is form an intergovernmental task force associated with this office. But you don't think that NTIA is an inappropriate place to have the primary focus, it just should be intergovernmentally run.

Mr. RISSE. That is right. No place should put a fence around this idea and say this is the only place it is important in the Federal Government, and think most people are involved—we have a telecommuting advisory council here in this region, which is a public, private, nonprofit organization, and the membership of that, the people in Federal agencies is a good cross section. We have got people from GSA and OPM and Transportation and Office of Technology Assessment and some congressional staff members and others, a wide range of people, because that is the kind of phenomena that it is.

Mr. MCMILLEN. We will try to improve the legislation with some of these suggestions. Does anybody have any final comments before we wrap this up?

Mr. RISSE. Good luck.

Mr. GRANTHAM. Support the effort totally.

Mr. MCMILLEN. I think we have made great progress here in just a matter of months, and Marsha, with your leadership and the phone company's and Dr. Grantham, we will continue to move this forward.

The Federal Government can be the magnet, can be the—provide the momentum here really I think to establish this concept nationwide, and we ought to finally do something. We do a lot of things as well as the Japanese and Germans, but this is one area where we ought to try to speed up our efforts so we can stay competitive.

We thank you all and with that I will adjourn the hearing.

[Whereupon, at 12 noon, the subcommittee was adjourned.]

[The following material was submitted. The complete Arthur D. Little report is retained in subcommittee files.]

CAN TELECOMMUNICATIONS HELP SOLVE AMERICA'S TRANSPORTATION PROBLEMS?

Ashok B. Boghani
Eric W. Kimble
Ethan E. Spencer

ARTHUR D. LITTLE, INC.

EXECUTIVE SUMMARY

Can telecommunications help solve America's transportation problems? The answer is definitely yes!

America's transportation infrastructure is facing a crisis with demand exceeding supply. Most efforts to address this crisis are directed at the supply side of this issue. This study focuses on reducing the demand on transportation infrastructure via telecommunications.

The purpose of this study is to provide an independent, objective, transportation-oriented quantification of the benefits to society from substituting transportation activities by activities performed using a modernized telecommunications infrastructure. This research report develops a disciplined methodology to quantify the societal benefits associated with alternative approaches to resolving America's transportation problems.

We estimate that a reasonable level (10-20%) of telecommunications substitution will:

- Allow six million automobile commuters to work at home,
- Replace almost three billion shopping trips annually,
- Eliminate almost thirteen million business trips annually through teleconferencing, and
- Eliminate over six hundred million truck and airplane delivery miles annually through electronic transfer of paper documents.

Arthur D Little

Conservatively, **these substitutions will provide $23 billion in annual benefits (in 1988 dollars).** These annual cost reductions result from:

- Elimination of 1.8 million tons of regulated pollutants produced by vehicles,
- Saving 3.5 billion gallons of gasoline,
- Freeing up 3.1 billion hours of personal time from reduced highway congestion, and elimination of commuting, shopping and business trips, and
- Reduction of some half a billion dollars in maintenance costs for the existing transportation infrastructure.

This research paper does not quantify all of the benefits associated with modernization of the telecommunications infrastructure. Only the benefits associated with transportation substitution are addressed. As such, it does not quantify the reduced costs and improved quality of life for individuals, especially the aged and disabled. Nor does it review the potential of shop-at-home to lower consumer prices by reducing retail distribution costs. We have no doubt that if these additional benefits were quantified, the impact would be substantial.

5.1 Base Case

We estimate that the annual societal benefits (i.e., benefits in increased productivity due to a more productive use of time: time that would have otherwise been spent in traveling, resulting in energy savings, pollution savings, and a reduction in infrastructure maintenance costs) from a national acceptance of substitution at a reasonable level amounts to about $23.20 billion. The urban areas represent the lion's share of this benefit—about 93.5% ($21.70 billion), while the rural areas get about 6.5% ($1.50 billion), as shown in Figure 5.1. This estimate is in 1988 dollars. In addition, about 785 million non-quantifiable leisure hours are gained in urban areas and 278 million in the rural areas.

In the urban areas, productivity increases amount to about 78% of the benefits, or $16.90 billion, while energy savings represent about $3.08 billion or 14% of the total. Pollution reduction due to substitution results in a savings of about $1.23 billion (about 6% of the total), while the infrastructure maintenance will be reduced by about half a billion dollars (about 2% of the total). Figure 5.2 shows this graphically.

In the rural areas, the productivity gain is significant but not as overpowering as that of the urban areas, as shown in figure 5.3. The pie is divided into productivity savings (around 61%) and energy (39%). (Remember that we assumed that all the infrastructure savings go to the urban areas and that the reduction in pollution will not result in monetary savings in the rural areas.)

In the urban areas, the time savings due to elimination of commuting almost equals the time savings due to congestion reduction (the former is about 932 million hours annually, the latter about 800 million). Remember that different groups of people receive these benefits--the work-at-home people get the time savings due to elimination of commuter trips (obviously), while the congestion reduction affects those who still drive to work, albeit on less crowded roads. The saving in shopping time is somewhat less, about 784 million hours, while the business time saved due to teleconferencing amounts to about 133 million hours.

As far as the energy savings in the urban areas are concerned, the savings due to a reduction in gasoline usage far outweigh those due to a reduction in the consumption of truck diesel or airplane fuel. Shop-at-home contributes most to car-mile reduction, work-at-home second, while the car business trip elimination due to teleconferencing is a distant third.

The reduction in carbon monoxide contributes almost 65% to the overall benefits due to pollution reduction. HC reduction contributes about 26%, while the reduction of NO_x contributes about 9% to the savings. Remember that we have put no dollar value to savings in CO_2 or PA. The effect of congestion reduction on pollution is fairly small compared to the effect of trip elimination. Also, the result of eliminating car trips on pollution reduction far outweighs that of truck or plane trip elimination.

Finally, if one examines the cost savings in infrastructure maintenance, it becomes apparent that the effect of reduction in flights on airport maintenance is much greater than the effect of reduction in truck-miles on highway maintenance.

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Statement from John S. Niles, July 27, 1992

Submitted to the U.S. House of Representatives Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce, for the record of its hearings on H.R. 5082, the "Telecommuting Act of 1992."

Note: John S. Niles is President of Global Telematics, a management consulting and policy research firm based in Seattle, Washington. He is currently managing the firm's work in support of a public-private telecommunications strategy task force in Idaho, developing a rural telecommuting center in Washington State, and designing telecommuting promotion materials for a telephone company. A research and demonstration project he started to establish the nation's first multi-company neighborhood work center for telecommuters has attracted visitors from Canada, Japan, and Europe. His past experience includes government service in Washington, DC and co-authorship of a book on corporate management innovation. He is a graduate of Massachusetts Institute of Technology and Carnegie Mellon University Graduate School of Industrial Administration.

I welcome and commend Congressional attention to telecommuting. Telecommuting is an important new pattern of resource allocation which provides people, organizations, and the American economy with *more optional flexibility in where, when, and how work is done.* This flexibility is increasing, like it or not. As noted by my colleague Linda Russe in her testimony to the Subcommittee, flexibility is now largely driven by the surging strength and innovativeness of relatively smaller U.S. firms, where most telecommuters work. In the largest firms, by contrast, managers often have difficulty breaking the mold set in earlier decades.

The late 20th century dominant pattern of workers commuting during morning and evening rush hours between residential areas and a downtown office building is gradually going away, as shown by surveys finding increasing numbers of people doing office work at home and by Census data showing people and jobs moving closer to each other in the suburbs.

Flexibility is Good

More flexibility in the use of time is a good thing for people, for companies, and for America. For example, in urban areas, it's great to be able to stop working at five p.m. and transition within a few minutes to ones personal life, instead of fighting traffic in a grinding commute that lasts until six p.m. More flexibility in the use of places is a good thing, too, such as the opportunity which telecommuting offers to provide entry-level Federal jobs located next to vocational schools in the poorest neighborhoods of the Washington DC metropolitan area, or on Native American lands in the Western states.

Unintended Consequences

At the same time, flexibility is leading to socially perverse consequences, such as a blurring of the boundaries between the work life demands of the high-pressure, high-speed, 24-hour, competitive global economy and a personal life that allows children, the elderly, non-work friends, spouses, and other significant personal relationships to get the attention they need and deserve. Will the availability of telecommuting cause an expansion of working hours at the expense of personal time? I am concerned, since average working hours are tending to increase in the U.S.

Furthermore, flexibility in work locations unaccompanied by appropriate public policies for land use, housing. education, and training is leading to a further geographic separation of socio-economic classes and a more divided America. This problem is exemplified by suburbanization of jobs and disinvestment in declining central cities.

Federal Responsibility

The good side of telecommuting cannot be responsibly disconnected from these unintended bad consequences of flexibility, especially in the efforts of the Federal Government. More than cheerleading is called for. The bad does not require that telecommuting be restricted, because it is good in so many ways, and offers so much potential for a better American way of life. Rather, telecommuting should be viewed as a popular, productivity-enhancing phenomenon necessitating policy improvements which prevent or mitigate adverse consequences.

Federal Focal Point for Telecommuting

With regard to HR 5082, in my view, it is inappropriate to charter the U.S. Department of Commerce in general, or the National Telecommunications and Information Administration in particular, as an "action agency" for promoting telecommuting. Their perspective, derived from their missions, is t- -row. The Departments of Transportation and Energy and Labor are also too na- -ly focused to manage by themselves the public interest in a phenomenon with such multi-faceted consequences and opportunities for benefit. I support my colleague Ed Risse's call for a *limited-term inter-agency Federal Task Force on telecommuting* to shape Federal action in the 1990's. In addition to the agencies named already, I recommend inclusion of Agriculture, HUD, HHS, Education, EPA, FEMA, GSA, OPM, NSF, and SBA.

Federal Support of Research

I believe the most important Federal role is the *support of fundamental research on the consequences and opportunities in increasing flexibility in the use of time and space*, of which telecommuting is a piece. For example, this would be a proper subject of comprehensive study by the Congressional Office of Technology Assessment. The OTA is capable of conducting a broad, objective multi-disciplinary study of telecommuting which would place this phenomenon in the context of technology, economic, and social trends

and national needs. On the executive side, I recommend that the National Science Foundation be charged by Congress with taking a new multi-disciplinary look at telecommuting to discover new knowledge that would benefit the nation. NSF supported pioneering work on telecommuting in the 1970s and early 1980s, and could now usefully revisit the topic, broadly defined to encompass the any-time, any-place economy that is our future.

Existing Organizations

In the meantime, telephone companies, computer companies, consulting firms such as Global Telematics and SYNERGY/Planning Inc., the existing grass-roots Telecommuting Advisory Councils in various regions, state governments like Virginia and Washington, university bodies such as the Institute for Transportation Studies at University of California Davis, and other organizations are collectively quite capable of maintaining national momentum in telecommuting applications. An exception in the coverage of existing institutions is concern for disadvantaged people and regions, covered last in my statement.

Federal Telecommuting Centers

Turning to the second part of HR 5082, I do support Federal investment in new telecommuting centers for its own workforce, as long as this investment is aimed at improving the long-term cost-effectiveness of the Federal operations whose workers will be relocated. This economically sound aim is in contrast to creating a cost-be-damned, uneconomic demonstration of telecommuting technique without line agency interest and follow-through. This second type of demonstration would be repetitious and unnecessary in light of the telecommuting center demonstrations already carried out by the Hawaii and Washington State Governments. Rather than placing the management of federal telecommuting satellite centers in a telecommunications policy shop such as NTIA, I recommend that implementation be carried out by Federal program managers who are already working on telecommuting and shared facilities, in programs such as Flexiplace in OPM or the Cooperative Administrative Support Unit (CASU) program within GSA. Funded line agency commitments to deploy some of their personnel into the centers should be obtained early in the planning process.

Relationship to Telecommunications Infrastructure

Finally, let me emphasize that the growth of telecommuting, and the growth in the capabilities of America's telecommunications are mutually reinforcing. A growth in the demand for either will increase demand for more of the other, as a long-run proposition. If HR 5082 results in a successful, well-publicized, institutionalized telecommuting experience for the Federal Government, I predict that the news would stimulate additional telecommuting in both the private and public sector. This new telecommuting would lead to new telecommunications purchases by the telecommuting practitioners, and in turn lead to further telecommunications infrastructure investment.

Disadvantaged People and Regions

As an extension of concepts in H.R. 5082, I recommend that the Congress give additional consideration to *finding the best geographic places all across America* to target stimulation of telecommuting and telecommunications infrastructure. In the current climate, I judge that using telecommuting and telecommunications investments to build human capacity in areas where large numbers of economically disadvantaged people live would be important for our country. The stimulation of more human thought about how to seize telecommuting opportunities is even more important than the telecommunications infrastructure multiplier. A focus on people suggests a larger investment, directed at more areas of the country, to achieve more local visibility. There are linkages to current economic development and rural development programs in EDA and USDA which I recommend be examined before moving forward.

Thank you for this opportunity to provide ideas and information.

ISBN 0-16-039423-6